

# **TEST REPORT**

(Vol. 9)

## **24-month Chronic and Carcinogenicity Study on Methanol in Fischer Rats**

Histopathological Sample Photographs

September 30, 1985

Mitsubishi Kaei Institute of Toxicology and Environmental Sciences  
(currently identified as Mitsubishi Chemical Safety Institute, Ltd.)

**No. 004**

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Methanol in Fisher Rats  
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## Photograph Details

Photo No.	Group	Sex	ID No.	Fate	Organ	Findings	Mag.	Stain	Page
1	10 ppm	Male	15	Killed <i>in extremis</i>	Kidneys	Pigmentation	X 100	H.E.	1
2	0 ppm	Female	1	Killed on schedule on Week 104	Kidneys	Pigmentation	X 100	H.E.	1
3	100 ppm	Male	36	Killed on schedule on Week 104	Kidneys	Chronic progressive <b>glomerulonephritis</b>	X 100	H.E.	1
4	0 ppm	Female	1	Killed on schedule on Week 104	Kidneys	Chronic progressive <b>glomerulonephritis</b> ; infiltration of leucocytes	X 100	H.E.	2
5	100 ppm	Female	3	Killed on schedule on Week 104	Kidneys	Urine cast	X 100	H.E.	2
6	10 ppm	Male	24	Killed on schedule on Week 104	Kidneys	Infiltration of leucocytes	X 100	H.E.	2
7	0 ppm	Male	7	Killed <i>in extremis</i>	Kidneys	Calcification	X 100	H.E.	3
8	100 ppm	Male	21	Found dead	Lung	Congestion	X 100	H.E.	3
9	1000 ppm	Female	25	Killed <i>in extremis</i>	Adrenal gland	Extramedullary hematopoiesis; vacuolar degeneration	X 100	H.E.	3
10	1000 ppm	Male	49	Killed <i>in extremis</i>	Adrenal gland	Vacuolar degeneration	X 100	H.E.	4
11	0 ppm	Male	10	Killed <i>in extremis</i>	Heart	Siderophore migration	X 100	H.E.	4
12	1000 ppm	Male	34	Found dead	Thymus	Hyperplasia of epithelial reticulum cells	X 100	H.E.	4
13	0 ppm	Female	1	Killed on schedule on Week 104	Thymus	Hyperplasia of epithelial reticulum cells	X 100	H.E.	5
14	0 ppm	Male	15	Killed on schedule on Week 104	Spleen	Congestion	X 100	H.E.	5
15	1000 ppm	Female	12	Killed <i>in extremis</i>	Spleen	Extramedullary hematopoiesis	X 100	H.E.	5
16	0 ppm	Male	2	Killed on schedule on Week 104	Bone marrow	Activation of hemopoiesis	X 100	H.E.	6
17	0 ppm	Male	50	Killed <i>in extremis</i>	Sublingual gland	Infiltration of leucocytes	X 100	H.E.	6
18	0 ppm	Female	2	Killed on schedule on Week 104	Parotid gland	Regenerative change	X 100	H.E.	6

## Photograph Details

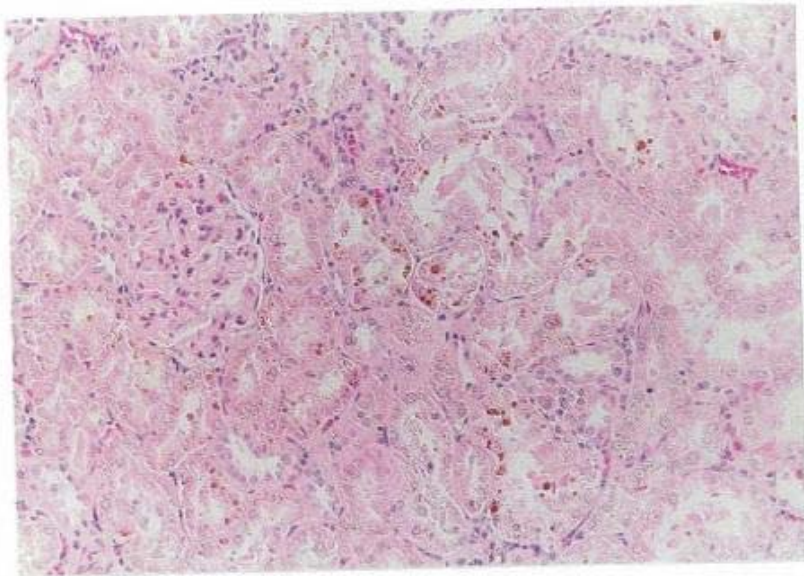
Photo No.	Group	Sex	ID No.	Fate	Organ	Findings	Mag.	Stain	Page
19	0 ppm	Female	5	Killed <i>in extremis</i>	Liver	Fatty degeneration; infiltration of leucocytes	X 100	H.E.	7
20	1000 ppm	Female	18	Killed <i>in extremis</i>	Liver	Focal necrosis	X 100	H.E.	7
21	0 ppm	Male	47	Killed on schedule on Week 104	Liver	Localized atrophy	X 100	H.E.	7
22	0 ppm	Male	7	Killed <i>in extremis</i>	Liver	Infiltration of leucocytes	X 100	H.E.	8
23	1000 ppm	Male	31	Killed on schedule on Week 104	Liver	Small granuloma	X 100	H.E.	8
24	1000 ppm	Male	47	Killed on schedule on Week 104	Orchis	Hyperplasia of Leydig cells	X 100	H.E.	8
25	0 ppm	Male	24	Killed <i>in extremis</i>	Mammary gland	Glandular cavity expansion	X 100	H.E.	9
26	0 ppm	Female	9	Killed on schedule on Week 104	Brain	Pigmentation	X 200	H.E.	9
27	1000 ppm	Male	22	Killed <i>in extremis</i>	Liver	Mononuclear cell leukemia	X 100	H.E.	9
28	1000 ppm	Male	30	Killed on schedule on Week 104	Spleen	Mononuclear cell leukemia	X 100	H.E.	10
29	1000 ppm	Male	40	Killed on schedule on Week 104	Lung	Papillary adenoma	X 100	H.E.	10
30	1000 ppm	Female	5	Killed <i>in extremis</i>	Lung	Papillary adenoma	X 100	H.E.	10
31	1000 ppm	Male	32	Killed <i>in extremis</i>	Lung	Adenomatosis	X 100	H.E.	11
32	1000 ppm	Female	18	Killed <i>in extremis</i>	Lung	Adenomatosis	X 100	H.E.	11
33	1000 ppm	Male	20	Killed on schedule on Week 104	Pancreas	Islet cell adenoma	X 100	H.E.	11
34	1000 ppm	Female	32	Killed on schedule on Week 104	Pancreas	Islet cell adenoma	X 100	H.E.	12
35	1000 ppm	Male	2	Killed on schedule on Week 104	Orchis	Leydig cell tumor	X 100	H.E.	12
36	1000 ppm	Female	17	Killed on schedule on Week 104	Uterus	Polyp	X 40	H.E.	12

## Photograph Details

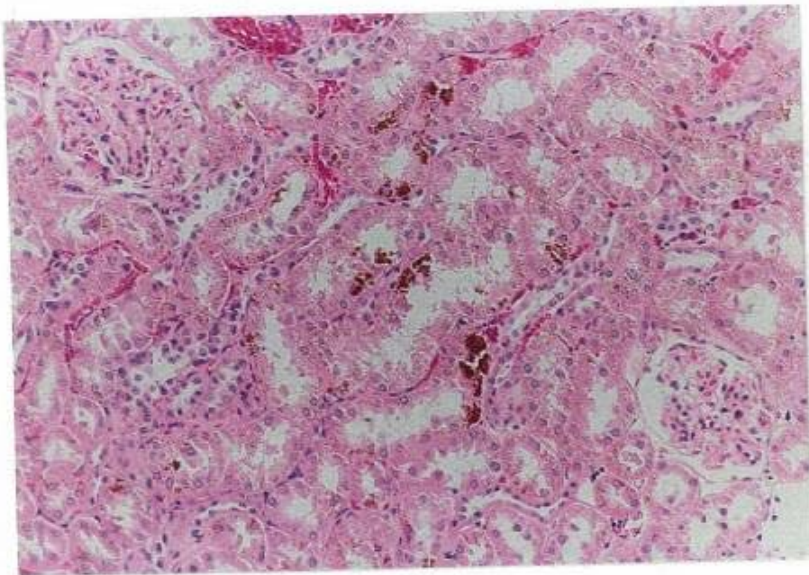
Photo No.	Group	Sex	ID No.	Fate	Organ	Findings	Mag.	Stain	Page
55	1000 ppm	Male	24	Found dead	Pleura	Malignant fibrous histiocytoma	X 100	H.E.	19
56	1000 ppm	Female	12	Killed <i>in extremis</i>	Peritoneum	Mesenchymoma	X 100	H.E.	19
57	1000 ppm	Male	18	Killed <i>in extremis</i>	Peritoneum	Mesothelioma	X 100	H.E.	19
58	1000 ppm	Female	33	Killed <i>in extremis</i>	Peritoneum	Sarcoma	X 100	H.E.	20
59	1000 ppm	Female	7	Killed on schedule on Week 104	Thymus	Thymoma	X 100	H.E.	20
60	1000 ppm	Female	47	Killed on schedule on Week 104	Spleen	Malignant lymphoma	X 100	H.E.	20
61	1000 ppm	Male	15	Killed on schedule on Week 104	Lung	Papillary adenocarcinoma	X 100	H.E.	21
62	1000 ppm	Male	13	Killed on schedule on Week 104	Pancreas	Exocrine adenoma	X 100	H.E.	21
63	1000 ppm	Female	44	Killed <i>in extremis</i>	Ovaries	Granulosa-theca cell tumor	X 100	H.E.	21
64	1000 ppm	Female	11	Killed <i>in extremis</i>	Uterus	Endometrial stromal sarcoma	X 100	H.E.	22
65	1000 ppm	Female	44	Killed <i>in extremis</i>	Uterus	Fibroma	X 100	H.E.	22
66	1000 ppm	Female	52	Killed on schedule on Week 104	Uterus	Leiomyoma	X 100	H.E.	22
67	1000 ppm	Female	12	Killed <i>in extremis</i>	Vagina	Mesenchymoma	X 100	H.E.	23
68	1000 ppm	Female	39	Killed on schedule on Week 104	Vagina	Polyp	X 40	H.E.	23
69	1000 ppm	Female	2	Found dead	Clitoral gland	Squamous cell carcinoma	X 100	H.E.	23
70	1000 ppm	Female	52	Killed on schedule on Week 104	Spine	Chordoma	X 100	H.E.	24
71	1000 ppm	Female	25	Killed <i>in extremis</i>	Muscle	Rhabdomyosarcoma	X 100	H.E.	24
72	1000 ppm	Male	12	Killed <i>in extremis</i>	Skin	Sebaceous squamous cell carcinoma	X 100	H.E.	24

## Photograph Details

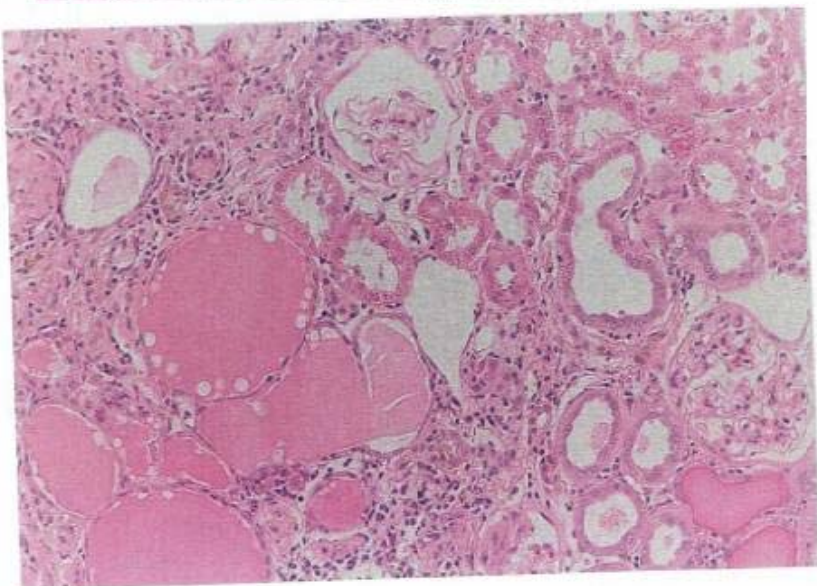
Photo No.	Group	Sex	ID No.	Fate	Organ	Findings	Mag.	Stain	Page
73	1000 ppm	Male	17	Killed on schedule on Week 104	Subcutis	Lipoma	X 100	H.E.	25
74	1000 ppm	Female	12	Killed <i>in extremis</i>	Subcutis	Lipoma	X 100	H.E.	25
75	1000 ppm	Male	14	Killed on schedule on Week 104	Subcutis	Lipo-sarcoma	X 100	H.E.	25
76	1000 ppm	Female	12	Killed <i>in extremis</i>	Subcutis	Mesenchymoma	X 100	H.E.	26
77	1000 ppm	Female	25	Killed <i>in extremis</i>	Mammary gland	Adenoma	X 100	H.E.	26
78	1000 ppm	Male	6	Killed on schedule on Week 104	Mammary gland	Fibroadenocarcinoma	X 100	H.E.	26
79	1000 ppm	Male	43	Killed on schedule on Week 104	Mammary gland	Hamartoma	X 100	H.E.	27
80	1000 ppm	Male	9	Killed <i>in extremis</i>	Brain	Astrocytoma	X 100	H.E.	27



1. 10 ppm Group, Male No. 15  
Killed *in extremis*  
  
Pigmentation in kidney is shown.  
  
(x 100; H.E. stain)

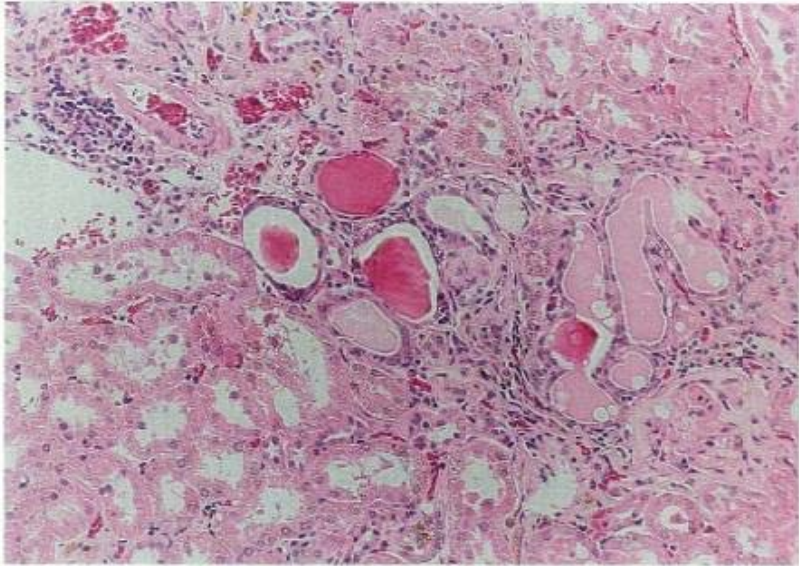


2. 0 ppm Group, Female No. 1  
Killed on schedule on Week 104  
  
Pigmentation in kidney is shown.  
  
(x 100; H.E. stain)



3. 100 ppm Group, Male No. 36  
Killed on schedule on Week 104  
  
Chronic progressive glomerulonephritis as well as Bowman's capsule, tubular basement membrane thickening, urine cast, regenerative change in tubular epithelium, infiltration of leucocytes and pigmentation in kidney are shown.  
  
(x 100; H.E. stain)

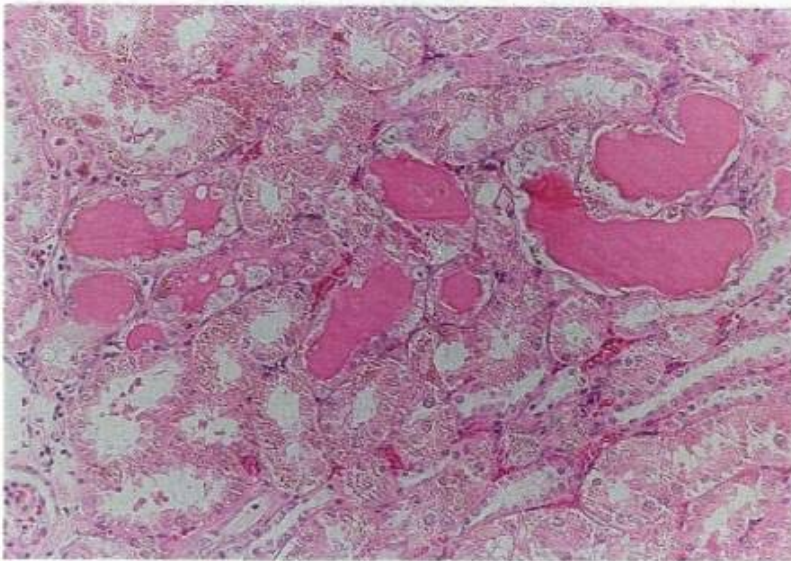




4. 0 ppm Group, Female No. 1  
Killed on schedule on Week 104

Chronic progressive glomerulonephritis as well as infiltration of leucocytes, urine cast, regenerative change in tubular epithelium, glomerulosclerosis and pigmentation in kidney are shown.

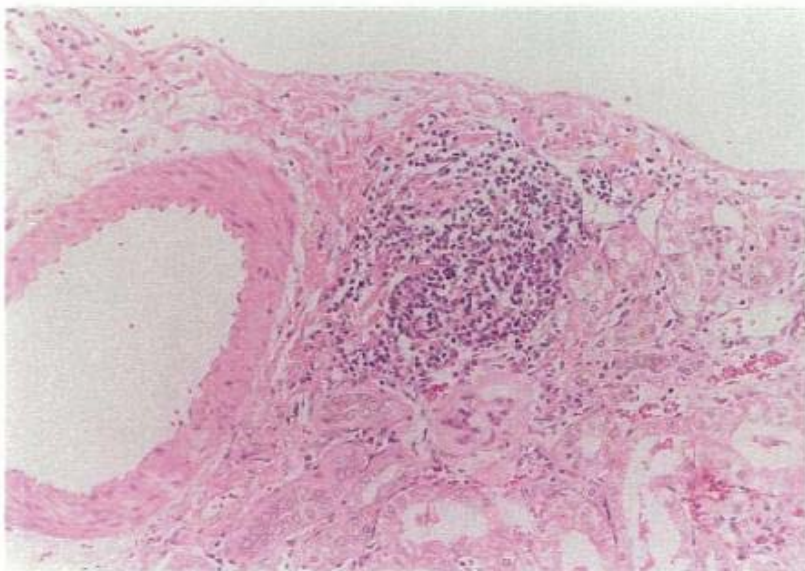
(x 100; H.E. stain)



5. 100 ppm Group, Male No. 3  
Killed on schedule on Week 104

Urine cast as well as pigmentation in kidney are shown

(x 100; H.E. stain)

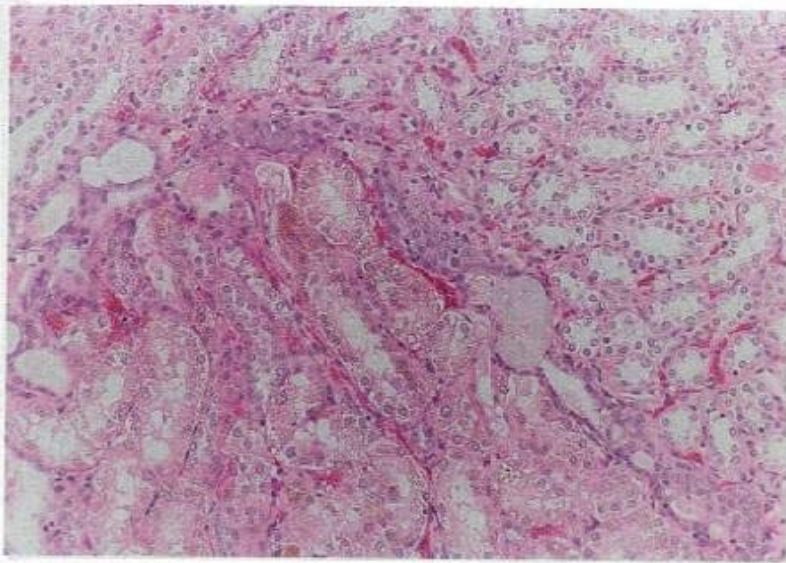


6. 10 ppm Group, Male No. 24  
Killed on schedule on Week 104

Infiltration of leucocytes in kidney is shown.

(x 100; H.E. stain)

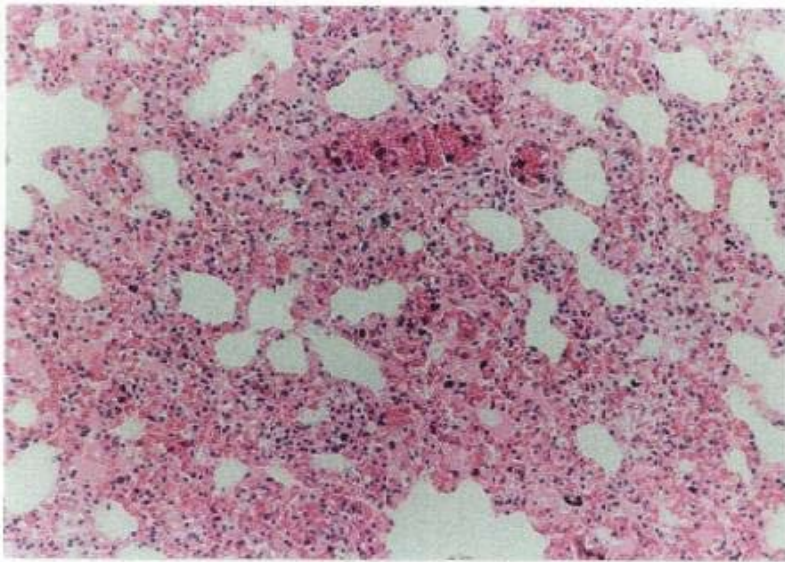




7. 0 ppm Group, Male No. 7  
Killed *in extremis*

Calcification in kidney is shown.

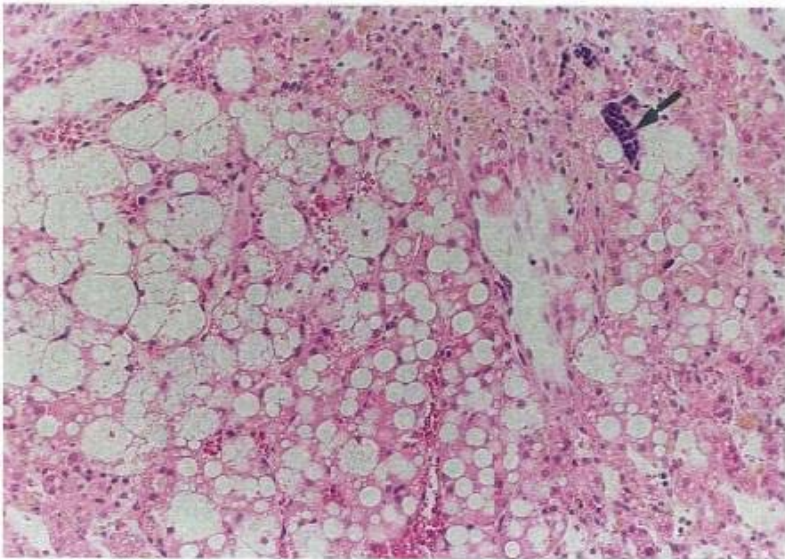
(x 100; H.E. stain)



8. 100 ppm Group, Male No. 21  
Found dead

Congestion in lung is shown.

(x 100; H.E. stain)

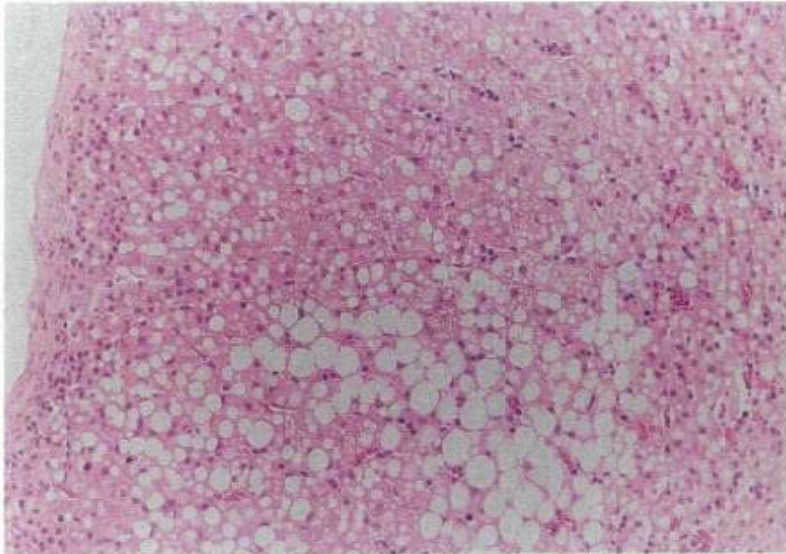


9. 1000 ppm Group, Female No. 25  
Killed *in extremis*

Extramedullary hematopoiesis  
(see arrow) as well as vacuolar  
degeneration in adrenal gland are  
shown.

(x 100; H.E. stain)

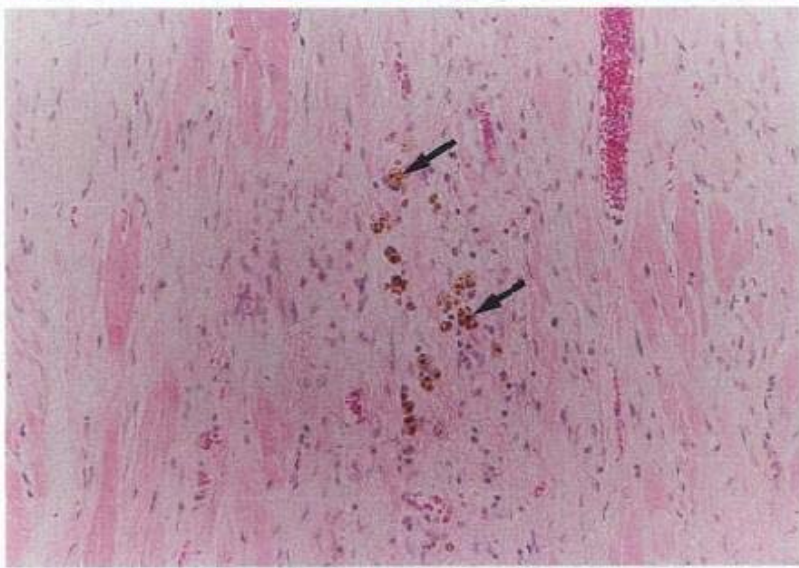




10. 1000 ppm Group, Male No. 49  
Killed *in extremis*

Vacuolar degeneration in adrenal gland is shown.

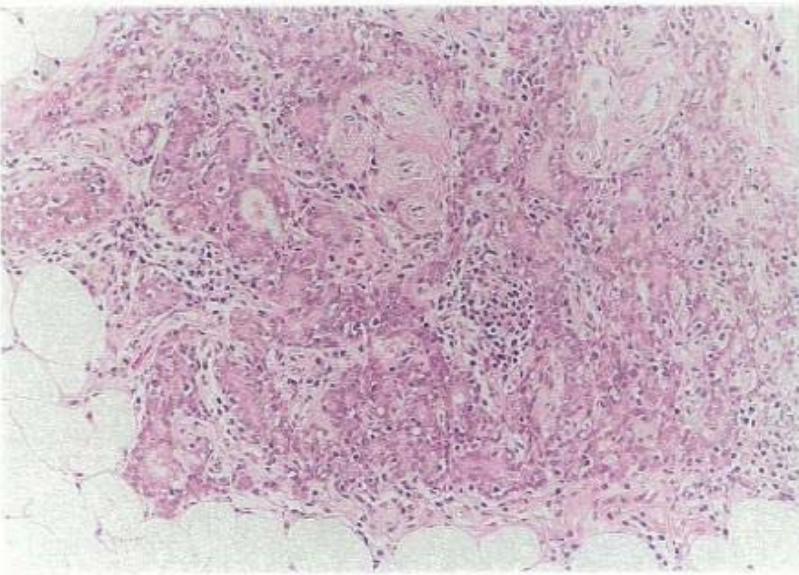
(x 100; H.E. stain)



11. 0 ppm Group, Male No. 10  
Killed *in extremis*

Siderophore migration (see arrows) as well as interstitial fibrosis in heart are shown.

(x 100; H.E. stain)

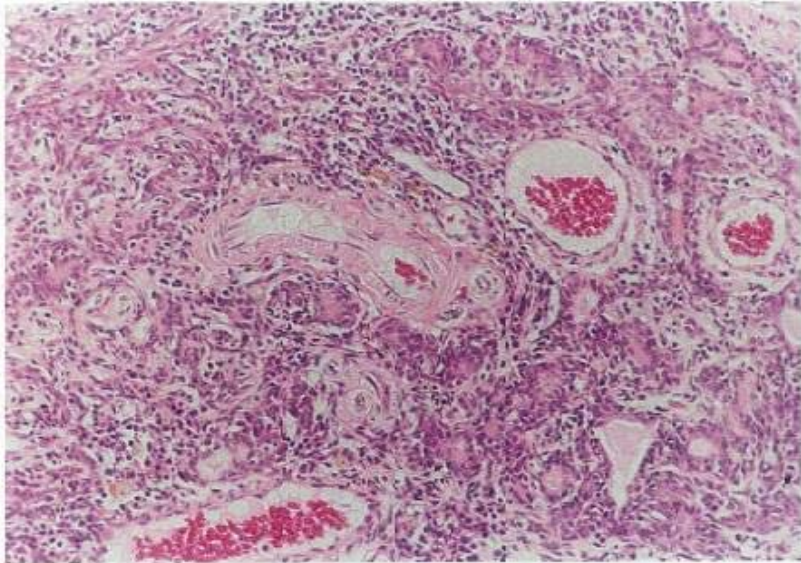


12. 1000 ppm Group, Male No. 34  
Found dead

Hyperplasia of epithelial reticulum cells in thymus is shown.

(x 100; H.E. stain)

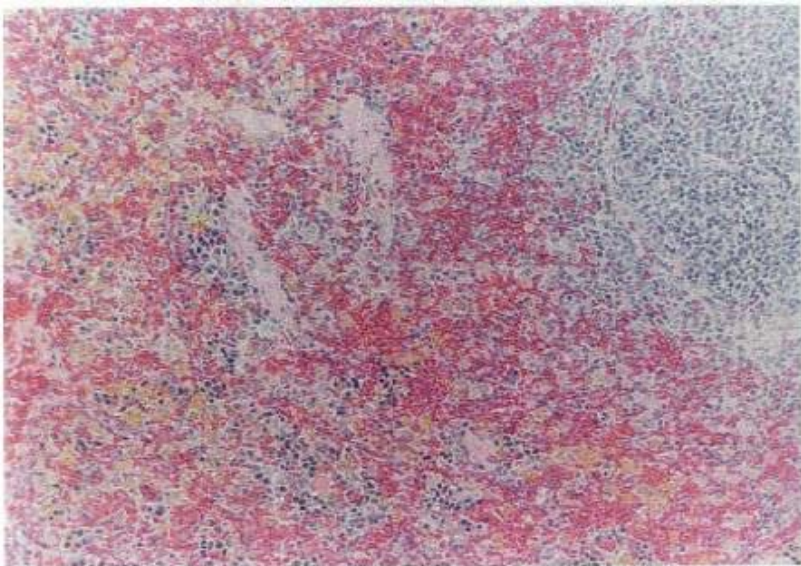




13. 0 ppm Group, Female No. 1  
Killed on schedule on Week 104

Hyperplasia of epithelial reticulum cells in thymus is shown.

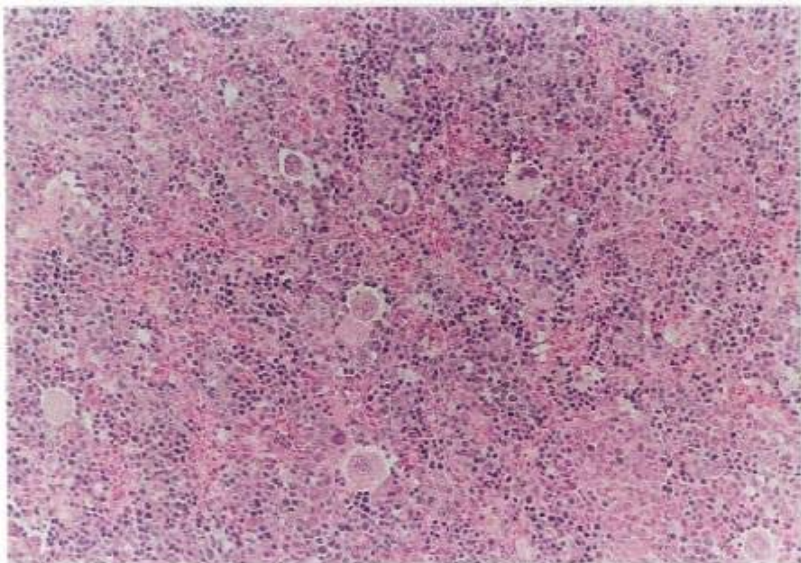
(x 100; H.E. stain)



14. 0 ppm Group, Male No. 15  
Killed on schedule on Week 104

Congestion in spleen is shown.

(x 100; H.E. stain)

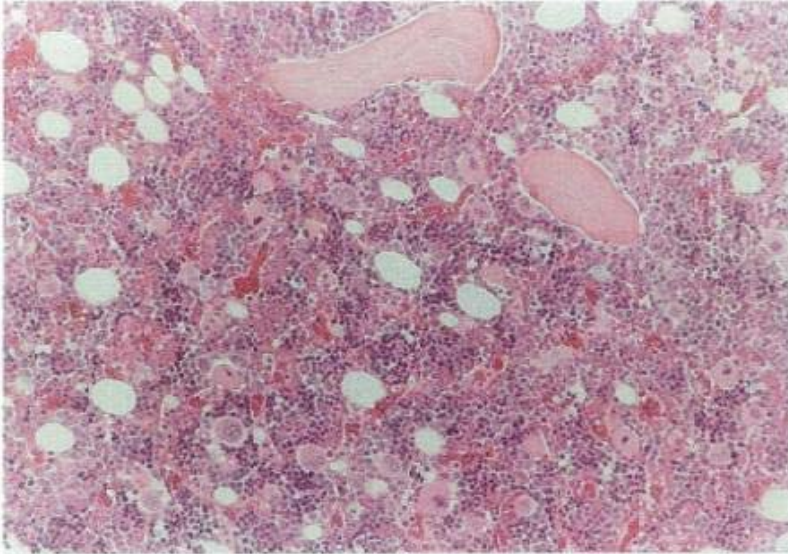


15. 1000 ppm Group, Female No. 12  
Killed *in extremis*

Extramedullary hematopoiesis in spleen is shown.

(x 100; H.E. stain)

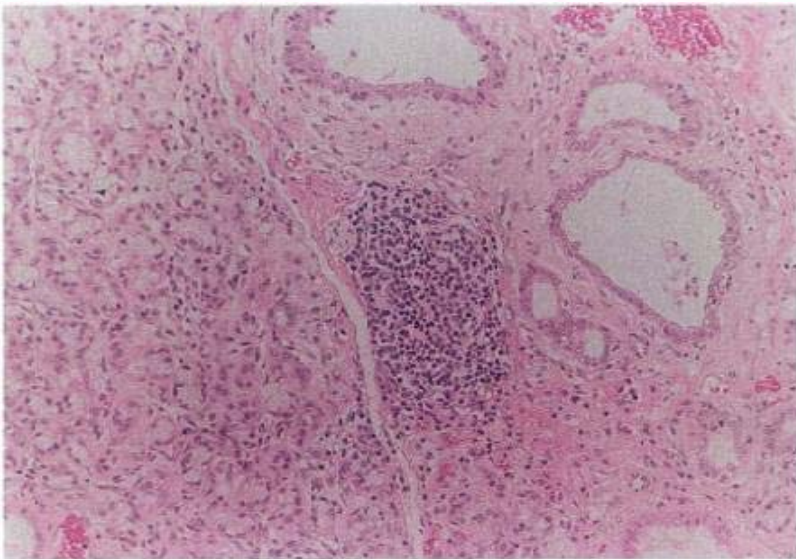




16. 0 ppm Group, Male No. 2  
Killed on schedule on Week 104

Activation of hemopoiesis as well as marrow ossification in bone marrow are shown.

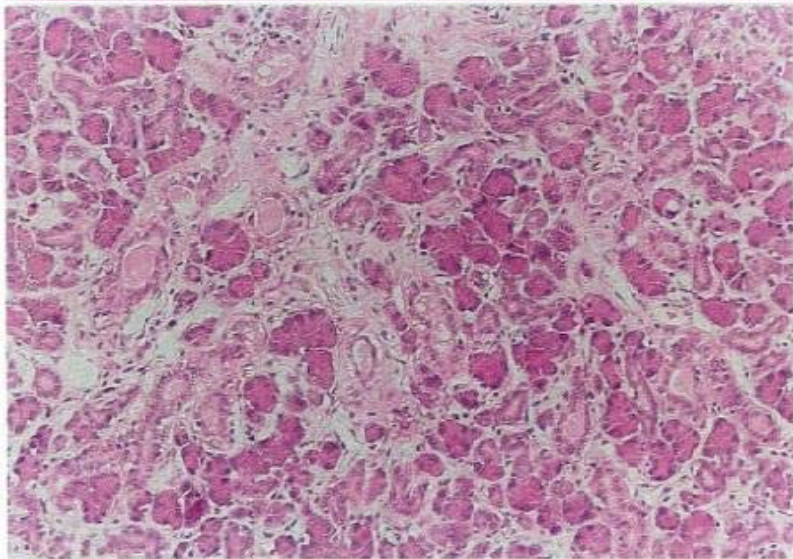
(x 100; H.E. stain)



17. 0 ppm Group, Male No. 50  
Killed *in extremis*

Infiltration of leucocytes in sublingual gland is shown.

(x 100; H.E. stain)

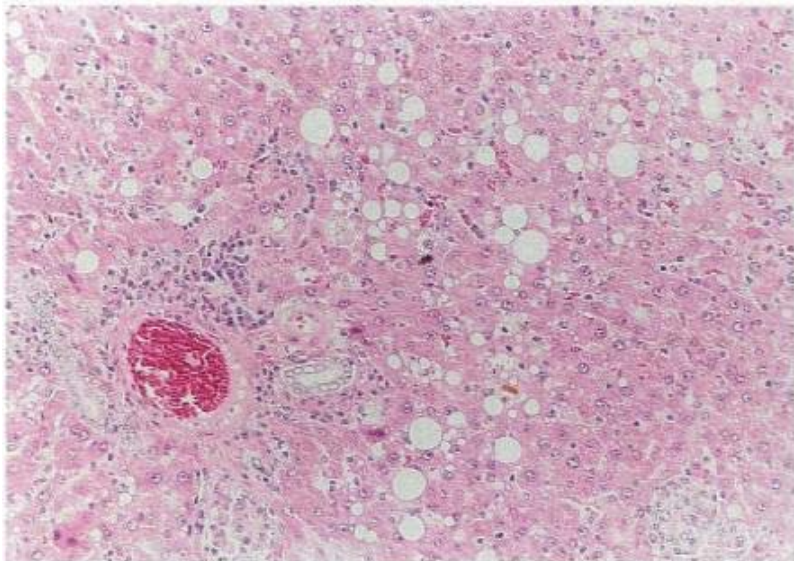


18. 0 ppm Group, Female No. 2  
Killed on schedule on Week 104

Regenerative change in parotid gland is shown.

(x 100; H.E. stain)

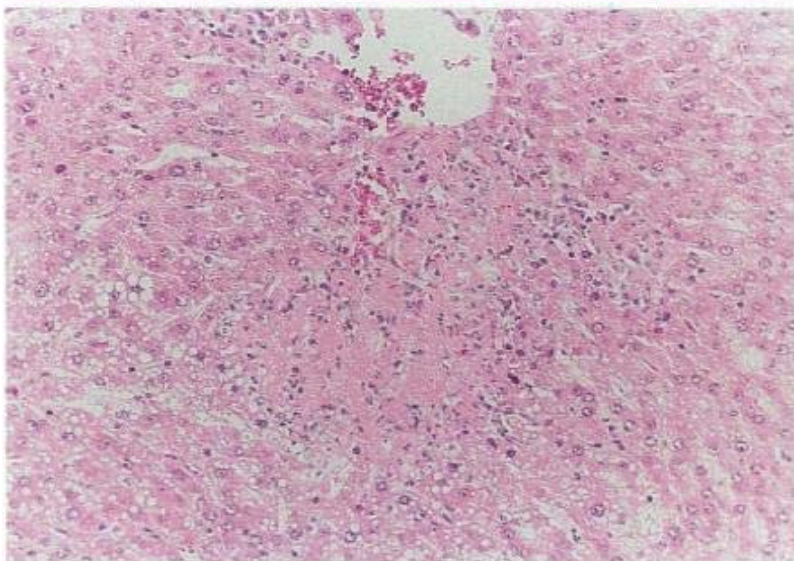




19. 0 ppm Group, Female No. 5  
Killed *in extremis*

Fatty degeneration as well as infiltration of leucocytes in liver are shown.

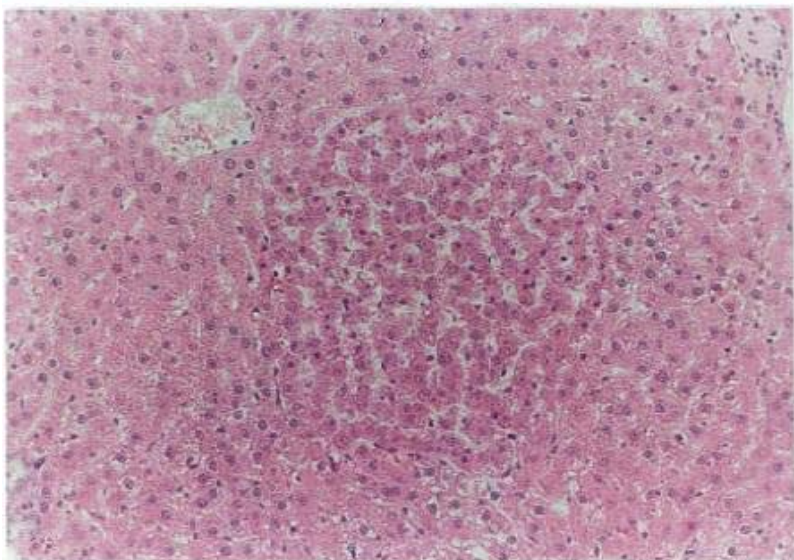
(x 100; H.E. stain)



20. 1000 ppm Group, Female No. 18  
Killed *in extremis*

Focal necrosis in liver is shown.

(x 100; H.E. stain)

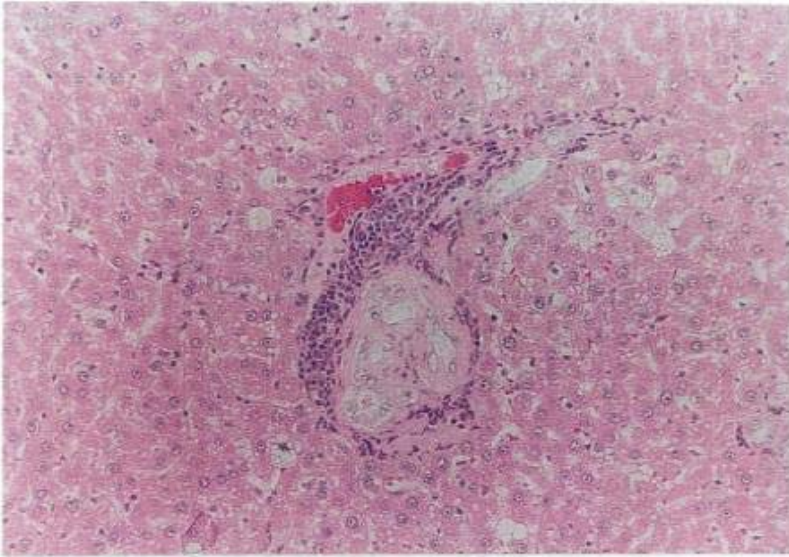


21. 0 ppm Group, Male No. 47  
Killed on schedule on Week 104

Localized atrophy in liver is shown.

(x 100; H.E. stain)

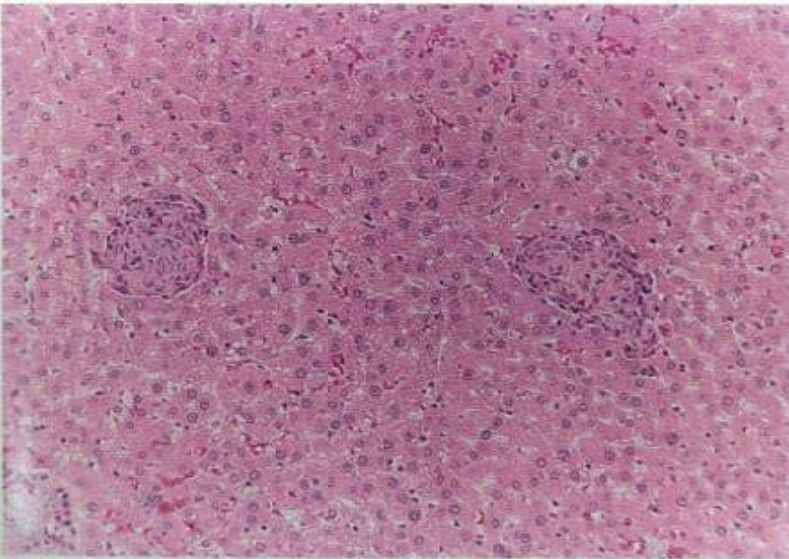




22. 0 ppm Group, Male No. 7  
Killed *in extremis*

Infiltration of leucocytes as well as bile duct proliferation in liver are shown.

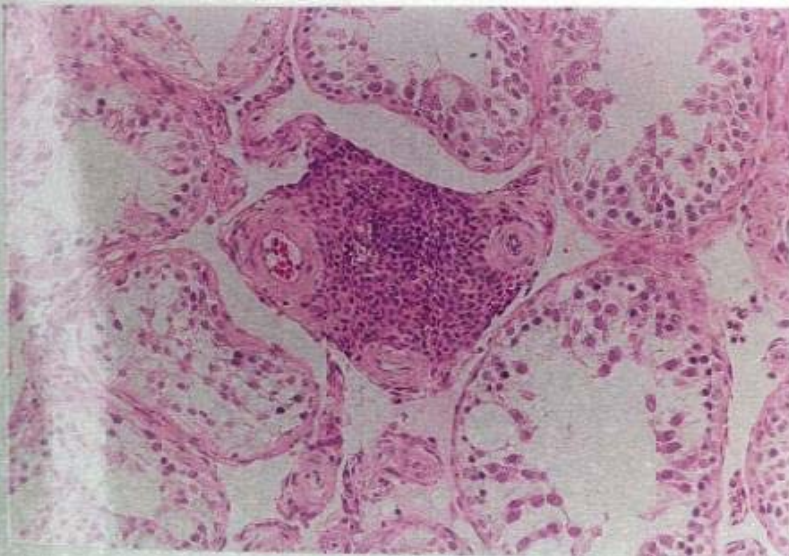
(x 100; H.E. stain)



23. 1000 ppm Group, Male No. 31  
Killed on schedule on Week 104

Small granuloma in liver is shown.

(x 100; H.E. stain)

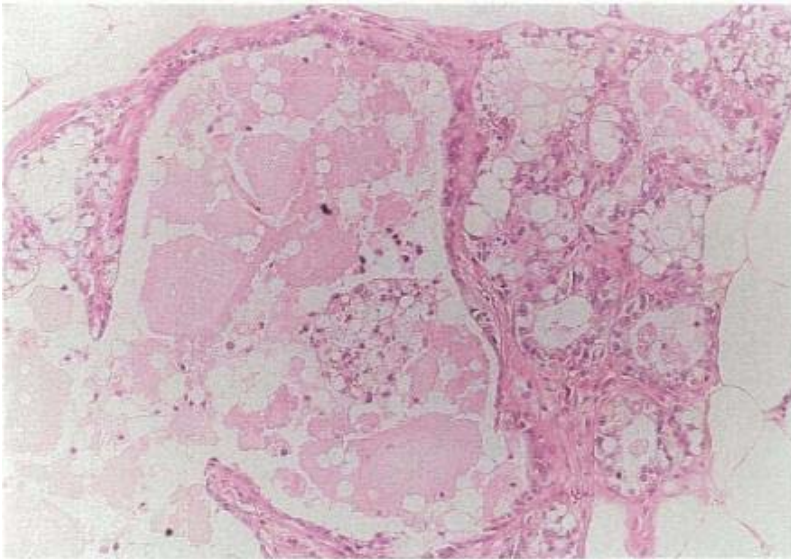


24. 1000 ppm Group, Male No. 47  
Killed on schedule on Week 104

Hyperplasia of Leydig cells in orchis is shown.

(x 100; H.E. stain)

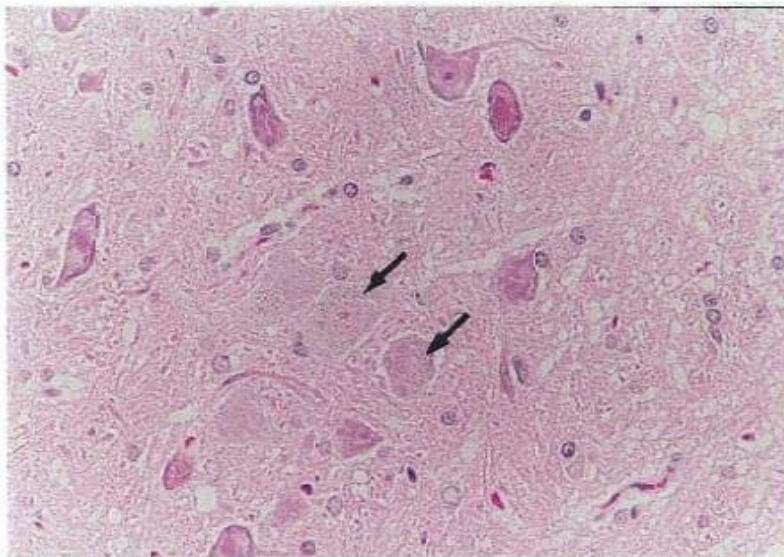




25. 0 ppm Group, Male No. 24  
Killed *in extremis*

Glandular cavity expansion in mammary gland is shown.

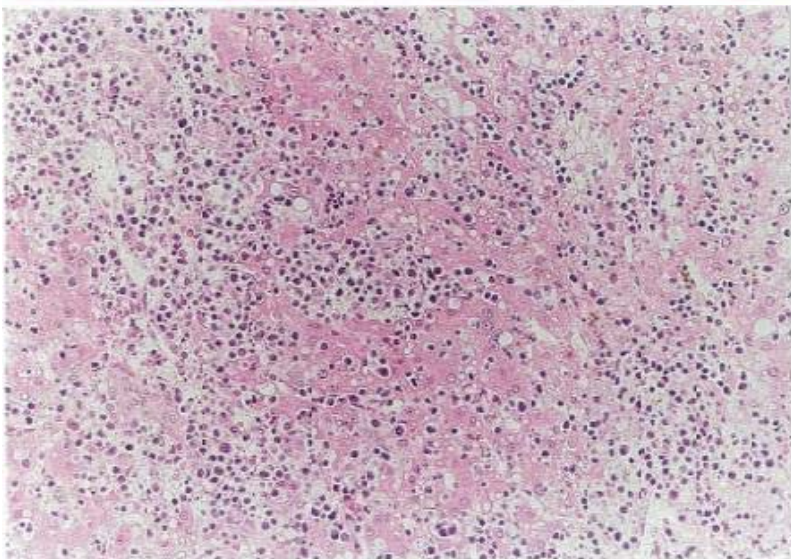
(x 100; H.E. stain)



26. 0 ppm Group, Female No. 9  
Killed on schedule on Week 104

Pigmentation in brain is shown (see arrows).

(x 200; H.E. stain)

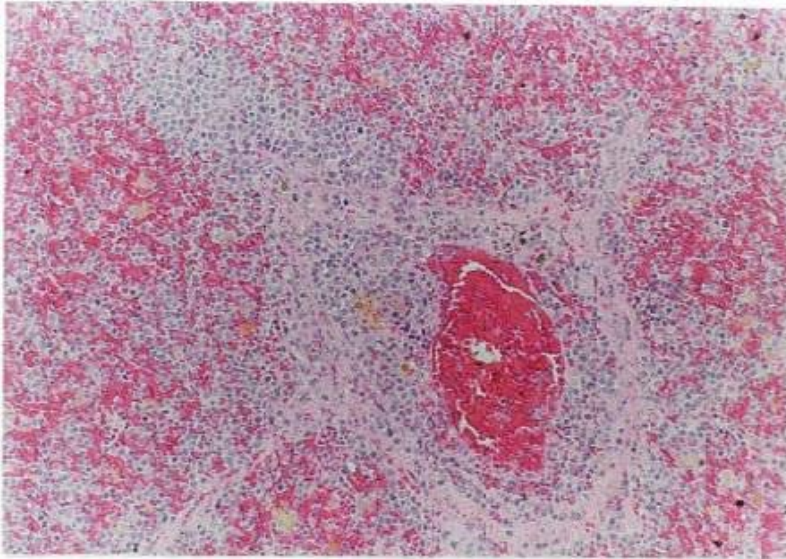


27. 1000 ppm Group, Male No. 22  
Killed *in extremis*

Mononuclear cell leukemia in liver is shown.

(x 100; H.E. stain)

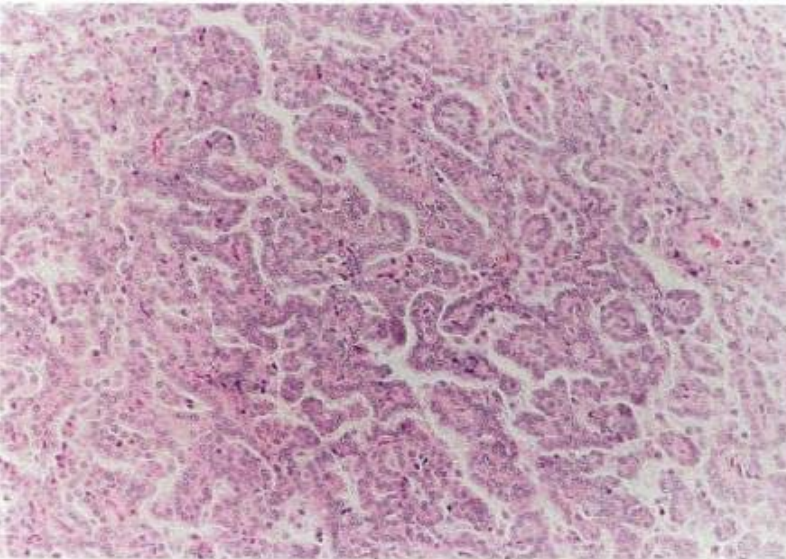




28. 1000 ppm Group, Female No. 30  
Killed on schedule on Week 104

Mononuclear cell leukemia in spleen is shown.

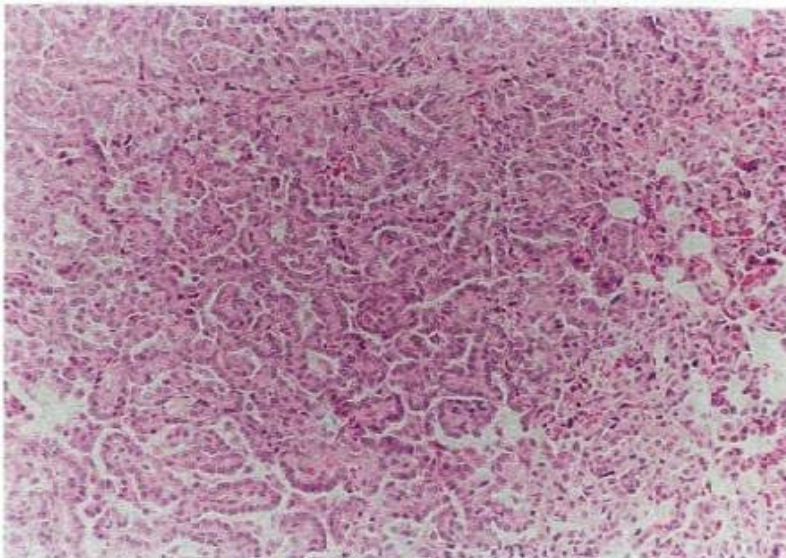
(x 100; H.E. stain)



29. 1000 ppm Group, Male No. 40  
Killed on schedule on Week 104

Papillary adenoma in lung is shown.

(x 100; H.E. stain)

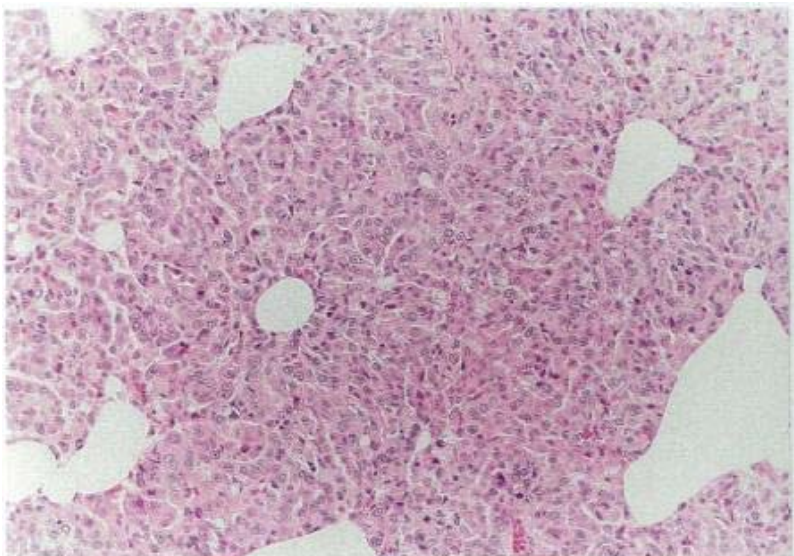


30. 1000 ppm Group, Female No. 5  
Killed *in extremis*

Papillary adenoma in lung is shown.

(x 100; H.E. stain)

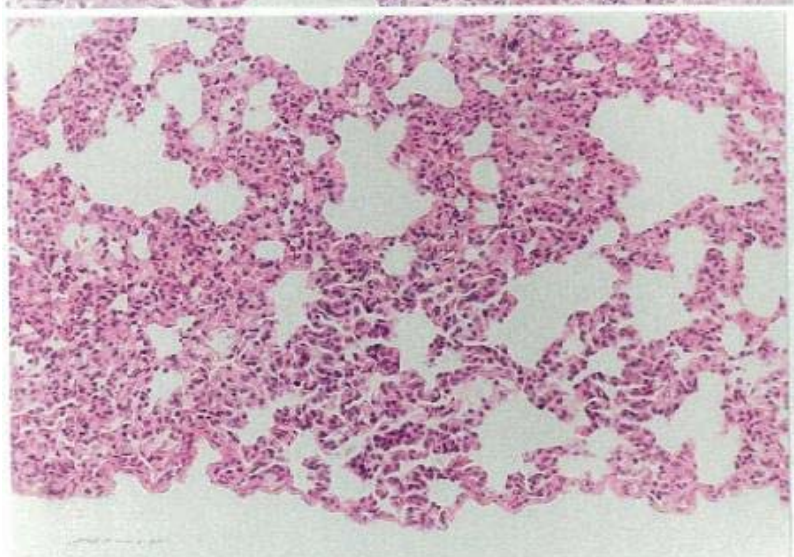




31. 1000 ppm Group, Male No. 32  
Killed *in extremis*

Adenomatosis in lung is shown.

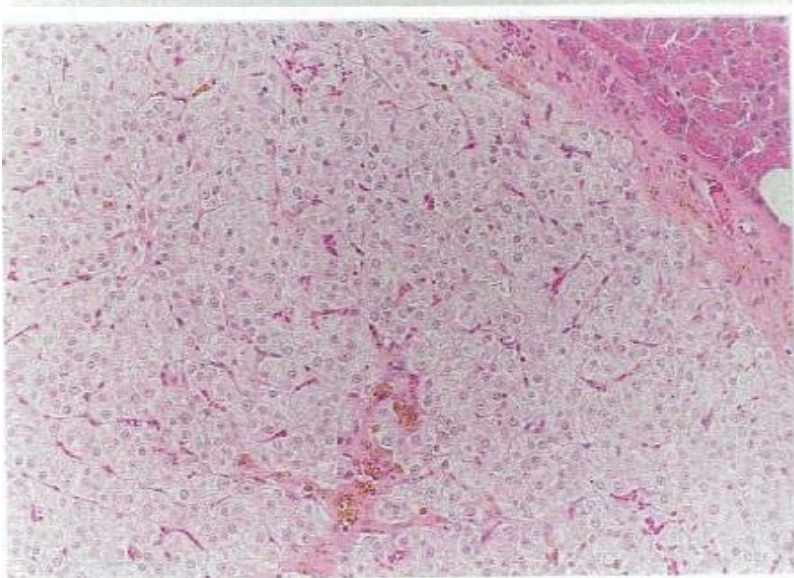
(x 100; H.E. stain)



32. 1000 ppm Group, Female No. 18  
Killed *in extremis*

Adenomatosis in lung is shown.

(x 100; H.E. stain)

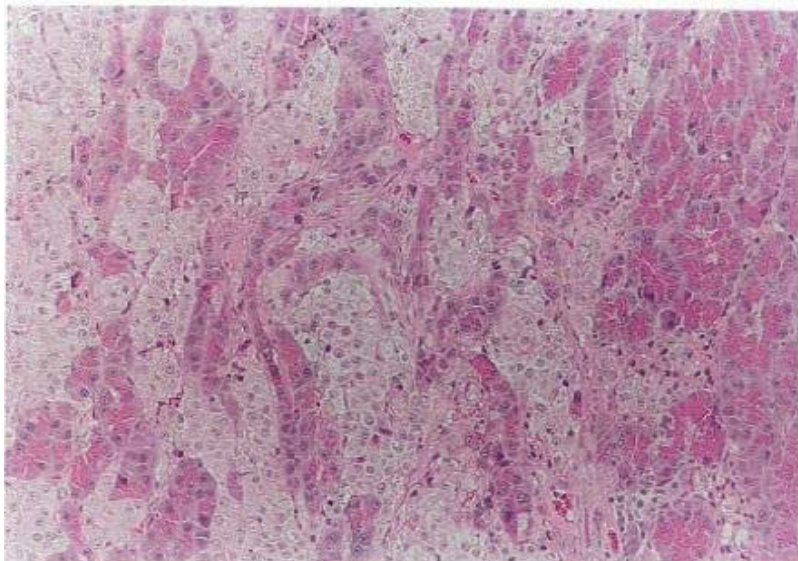


33. 1000 ppm Group, Male No. 20  
Killed on schedule on Week 104

Islet cell adenoma in pancreas is shown.

(x 100; H.E. stain)

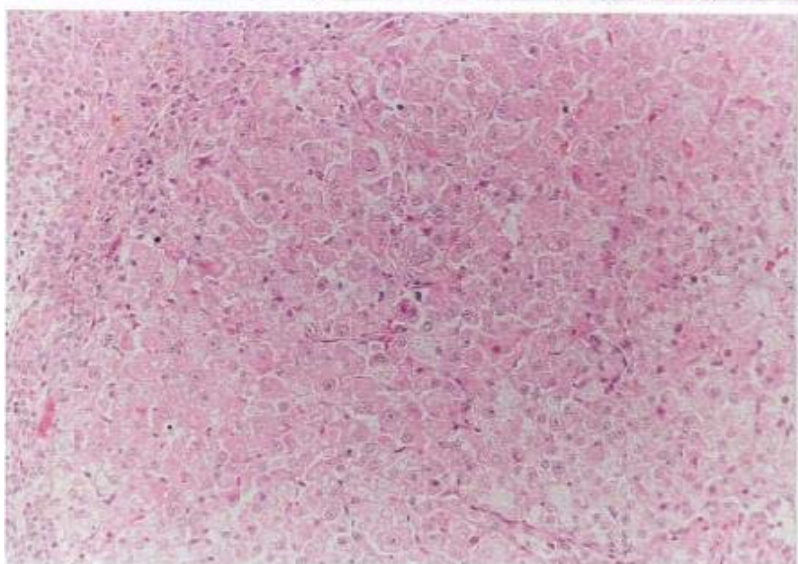




34. 1000 ppm Group, Female No. 32  
Killed on schedule on Week 104

Islet cell adenoma in pancreas is shown.

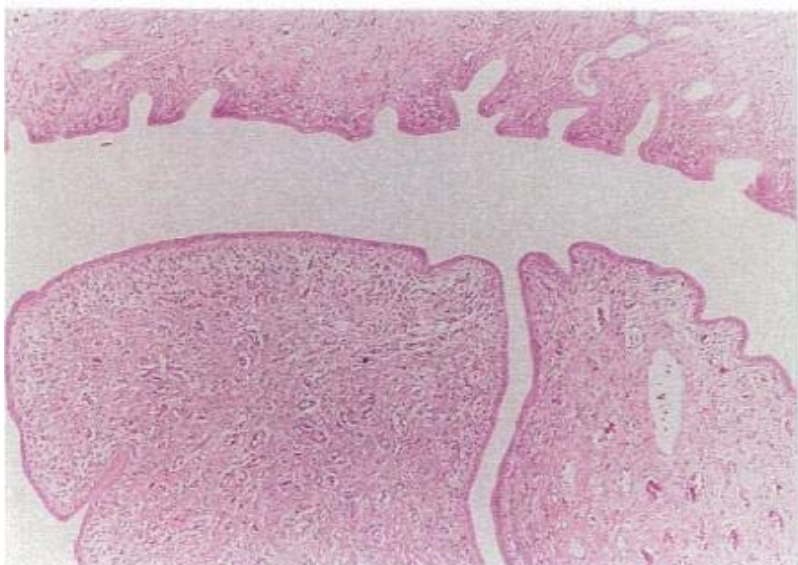
(x 100; H.E. stain)



35. 1000 ppm Group, Male No. 2  
Killed on schedule on Week 104

Leydig cell tumor in orchis is shown.

(x 100; H.E. stain)

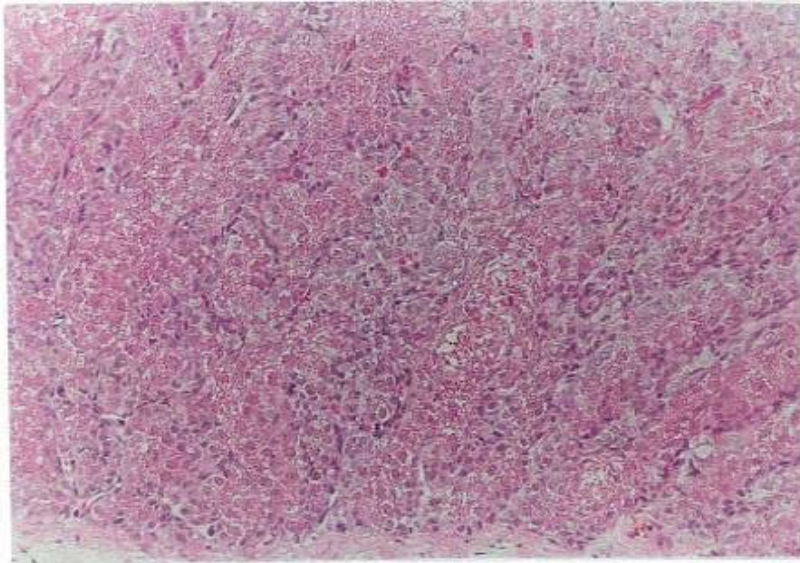


36. 1000 ppm Group, Female No. 17  
Killed on schedule on Week 104

Polyp in uterus is shown.

(x 40; H.E. stain)

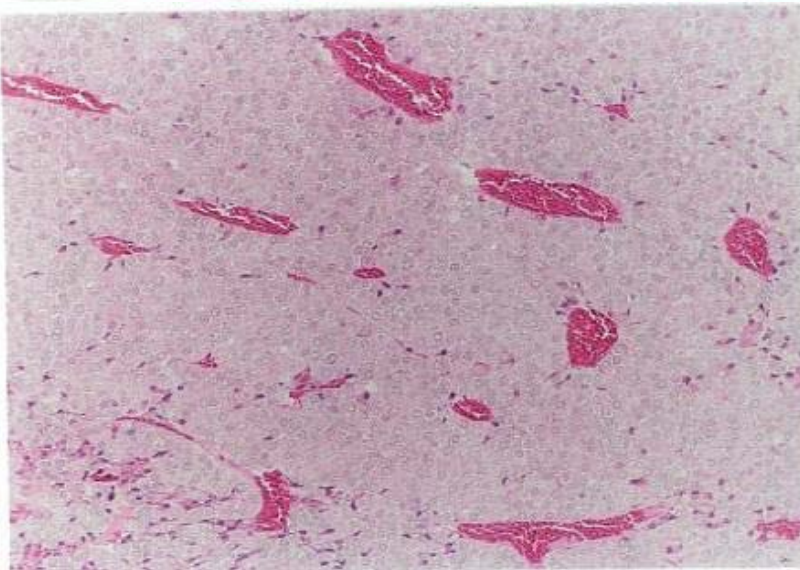




37. 1000 ppm Group, Female No. 5  
Killed *in extremis*

Adenocarcinoma in clitoral gland is shown.

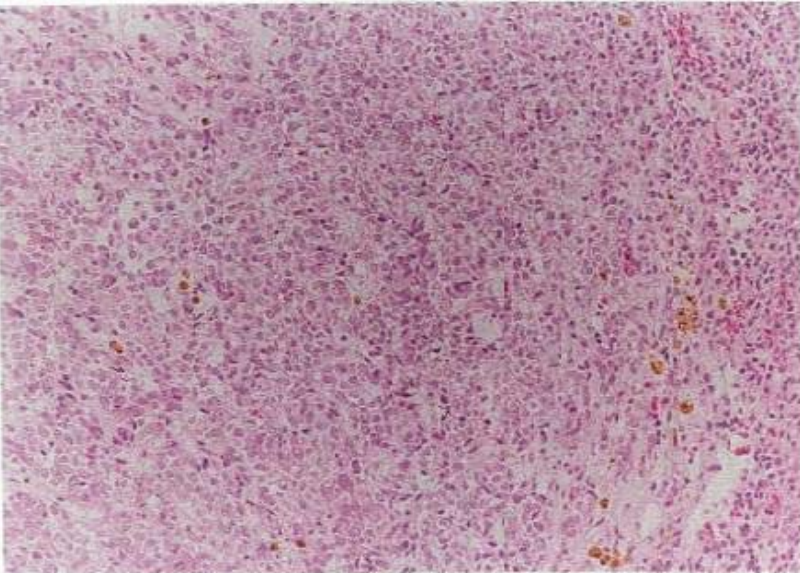
(x 100; H.E. stain)



38. 1000 ppm Group, Male No. 21  
Killed *in extremis*

Adenoma in pituitary gland is shown.

(x 100; H.E. stain)

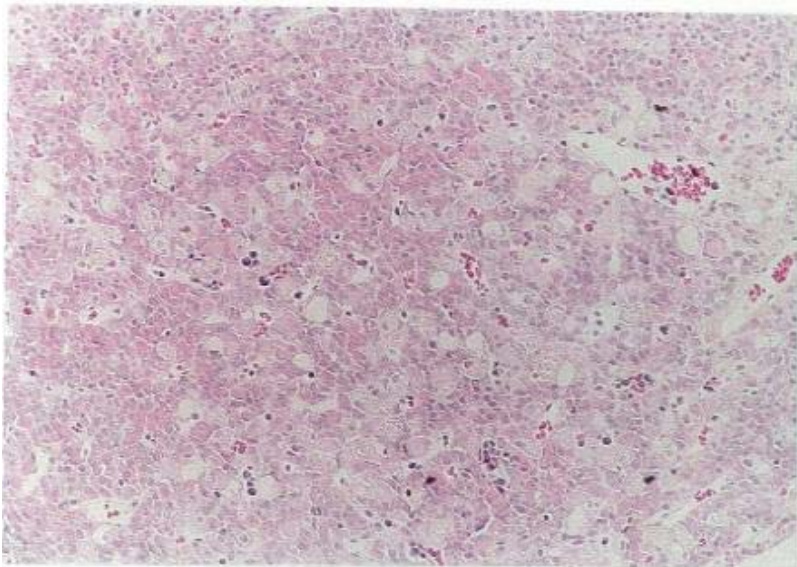


39. 1000 ppm Group, Female No. 5  
Killed *in extremis*

Adenoma in pituitary gland is shown.

(x 100; H.E. stain)

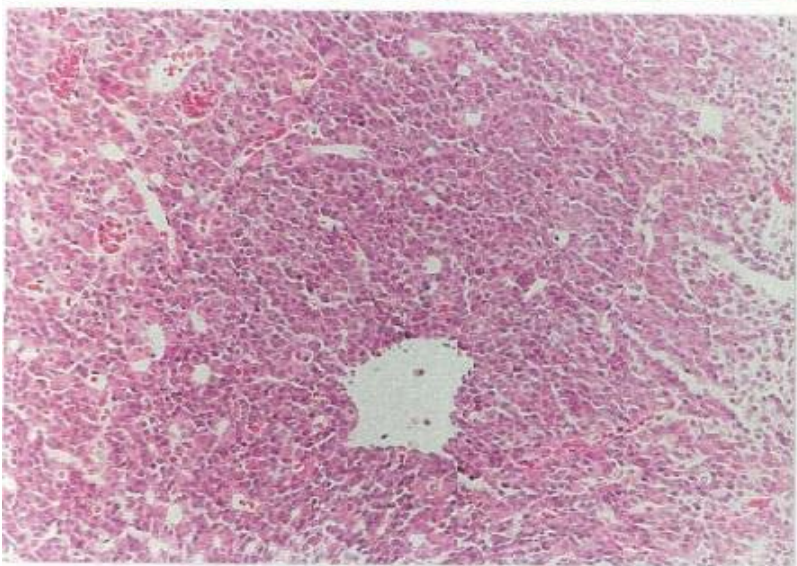




40. 0 ppm Group, Male No. 16  
Killed *in extremis*

Hyperplasia of chromophobe cell  
in pituitary gland is shown.

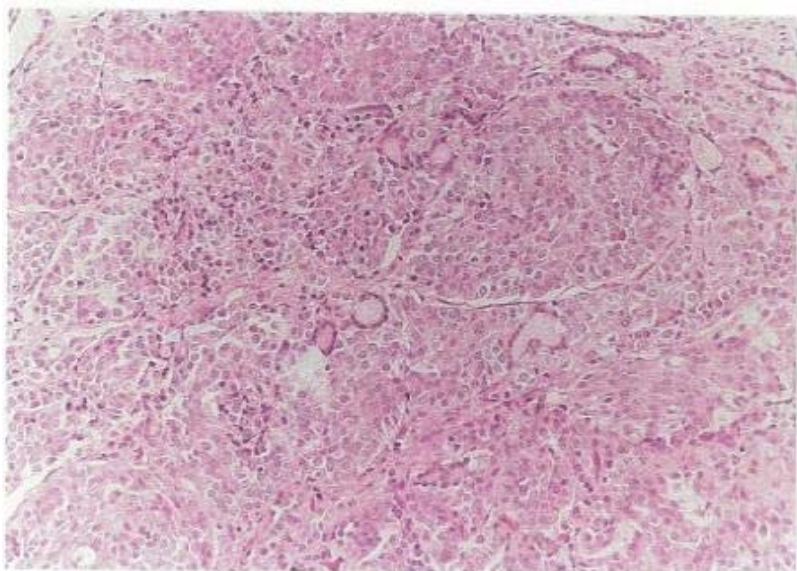
(x 100; H.E. stain)



41. 1000 ppm Group, Female No. 1  
Killed on schedule on Week 104

Hyperplasia of chromophobe cell  
in pituitary gland is shown.

(x 100; H.E. stain)

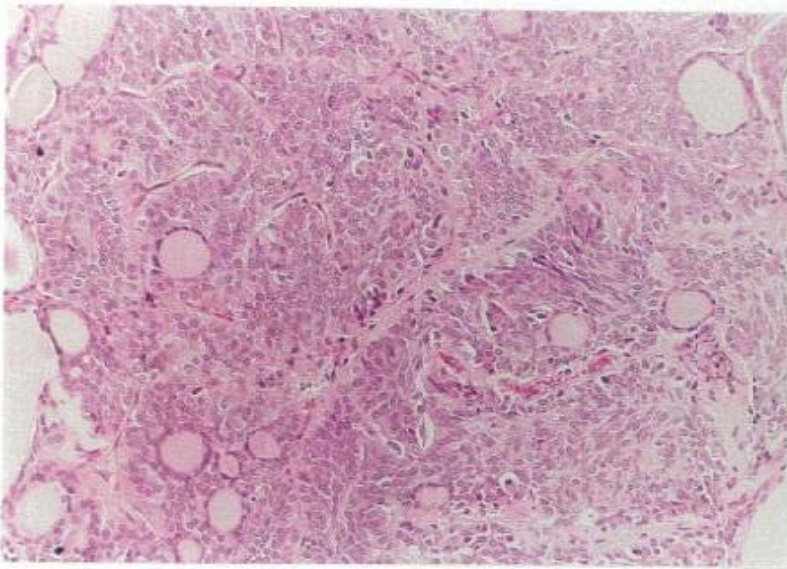


42. 1000 ppm Group, Male No. 29  
Killed *in extremis*

C-cell adenoma in thyroid gland is  
shown.

(x 100; H.E. stain)

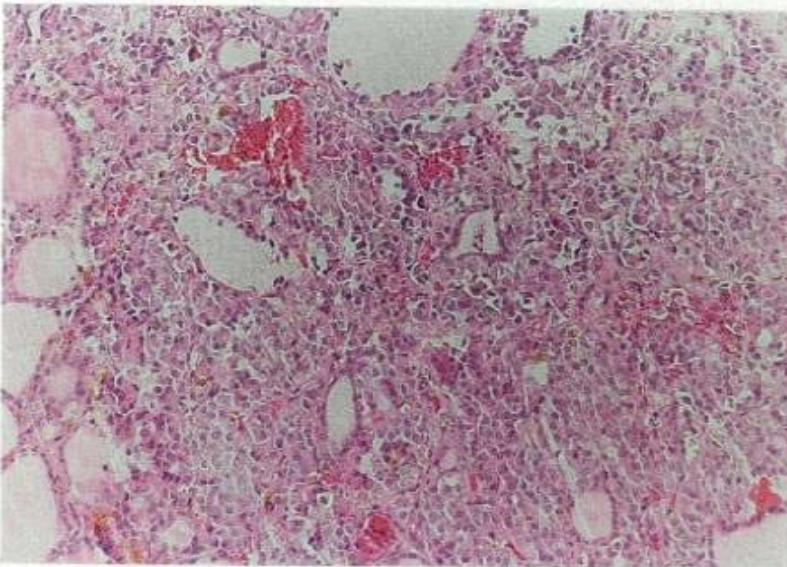




43. 1000 ppm Group, Female No. 36  
Killed on schedule on Week 104

C-cell adenoma in thyroid gland is shown.

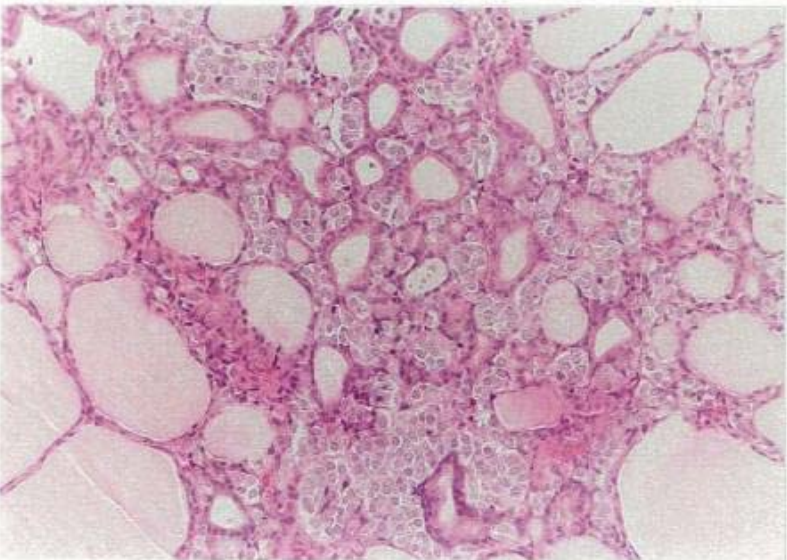
(x 100; H.E. stain)



44. 1000 ppm Group, Male No. 13  
Killed on schedule on Week 104

Hyperplasia of C-cell in thyroid gland is shown.

(x 100; H.E. stain)

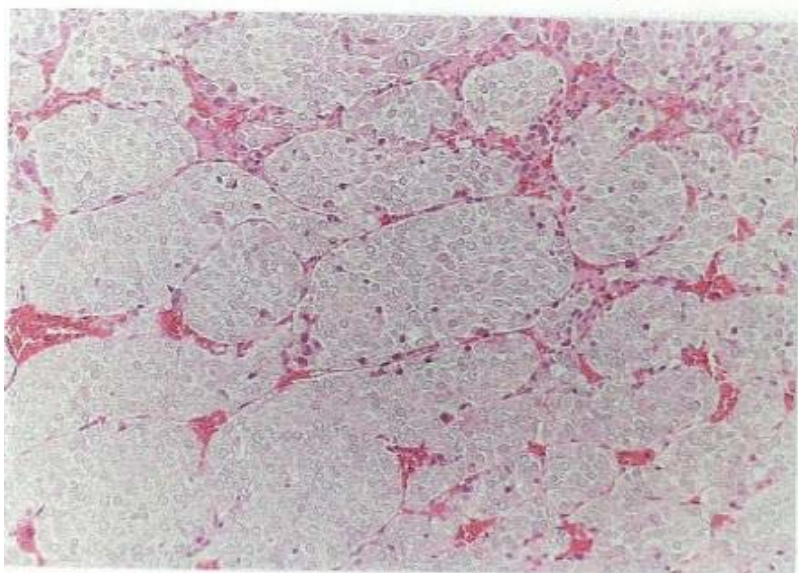


45. 1000 ppm Group, Female No. 25  
Killed *in extremis*

Hyperplasia of C-cell in thyroid gland is shown.

(x 100; H.E. stain)

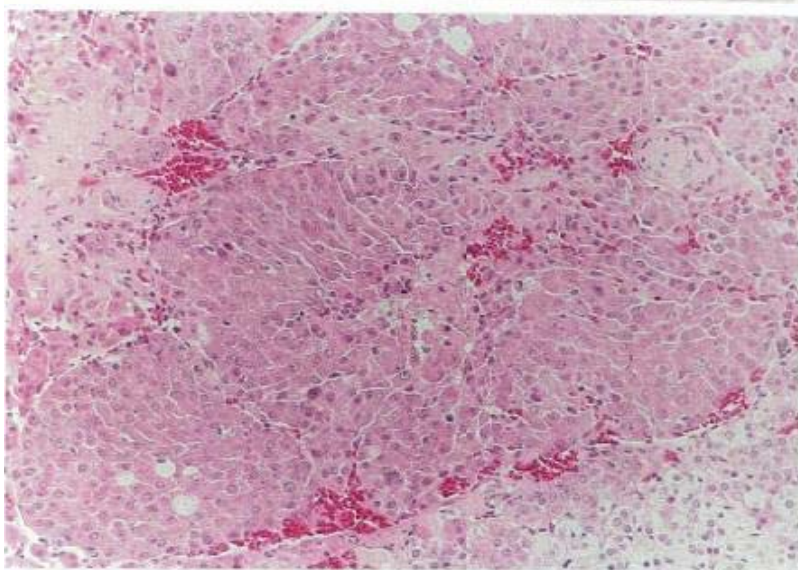




46. 1000 ppm Group, Male No. 37  
Killed on schedule on Week 104

Pheochromocytoma in adrenal gland is shown.

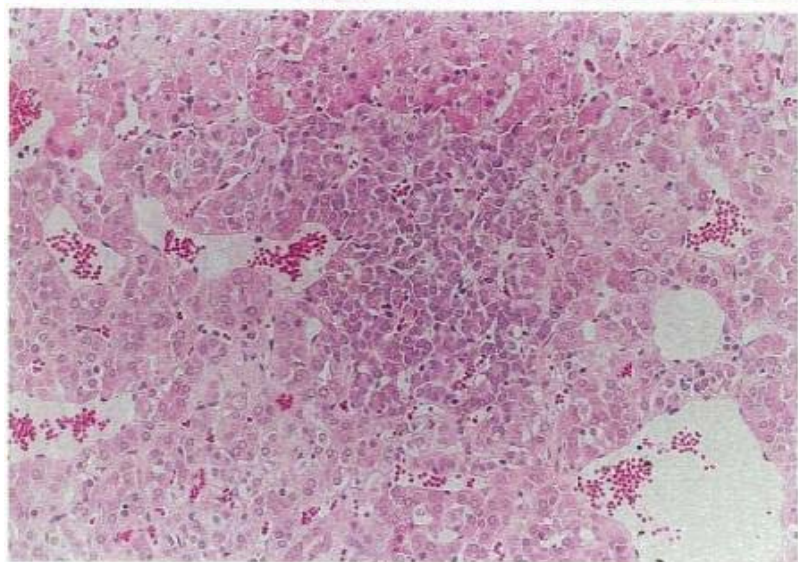
(x 100; H.E. stain)



47. 1000 ppm Group, Female No. 4  
Killed on schedule on Week 104

Pheochromocytoma in adrenal gland is shown.

(x 100; H.E. stain)

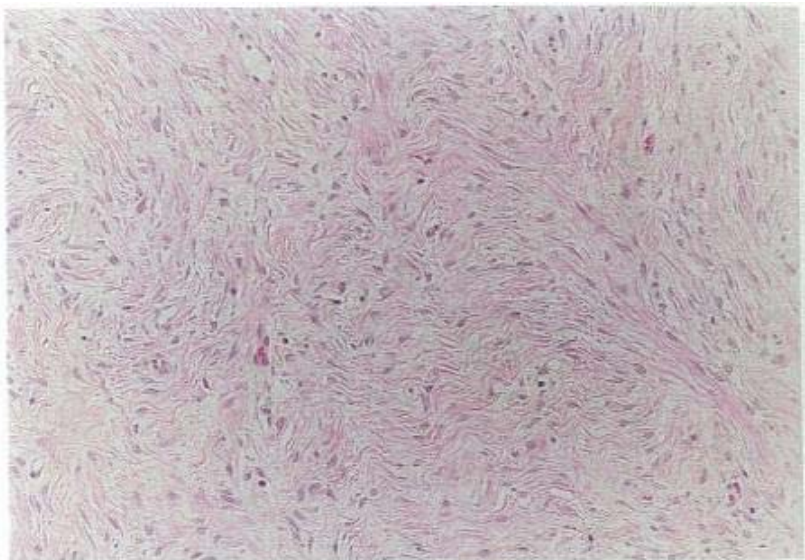


48. 100 ppm Group, Female No. 13  
Killed on schedule on Week 104

Hyperplasia of medullary cells in adrenal gland is shown.

(x 100; H.E. stain)

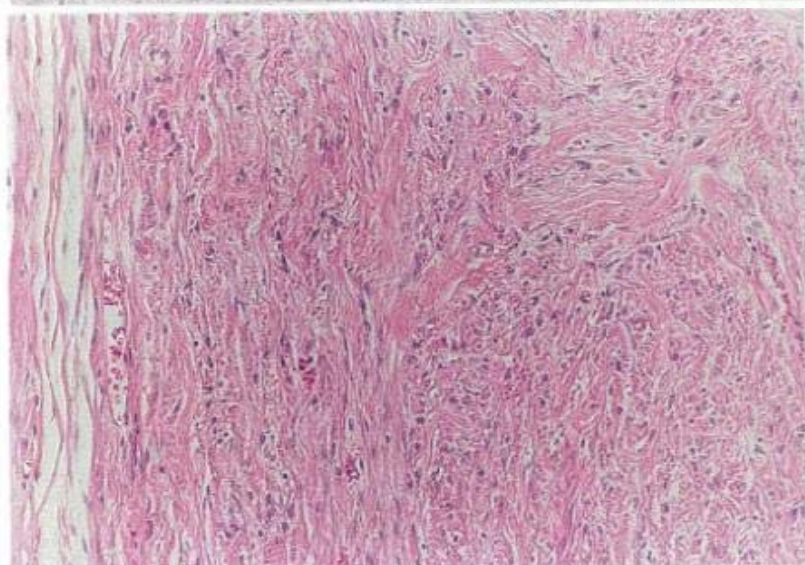




49. 1000 ppm Group, Male No. 36  
Killed on schedule on Week 104

Fibroma in subcutis is shown.

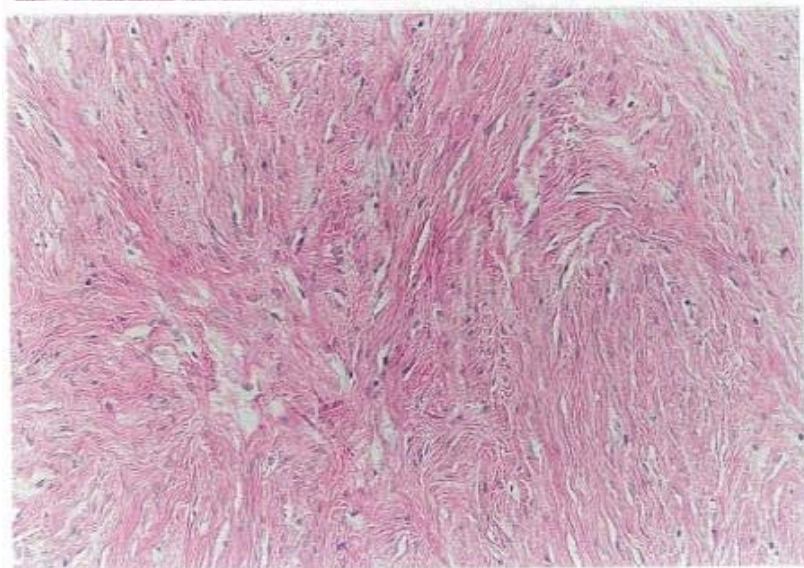
(x 100; H.E. stain)



50. 1000 ppm Group, Female No. 22  
Killed on schedule on Week 104

Fibroma in subcutis is shown.

(x 100; H.E. stain)

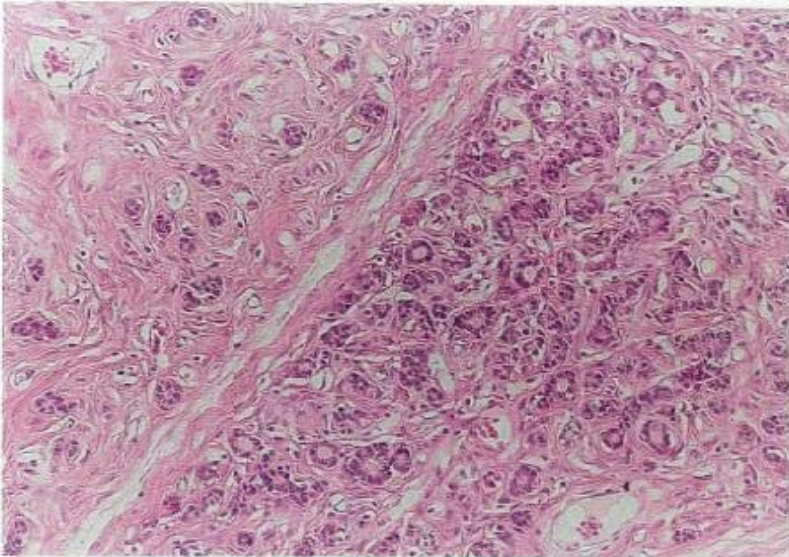


51. 1000 ppm Group, Male No. 5  
Killed on schedule on Week 104

Fibrosarcoma in subcutis is shown.

(x 100; H.E. stain)

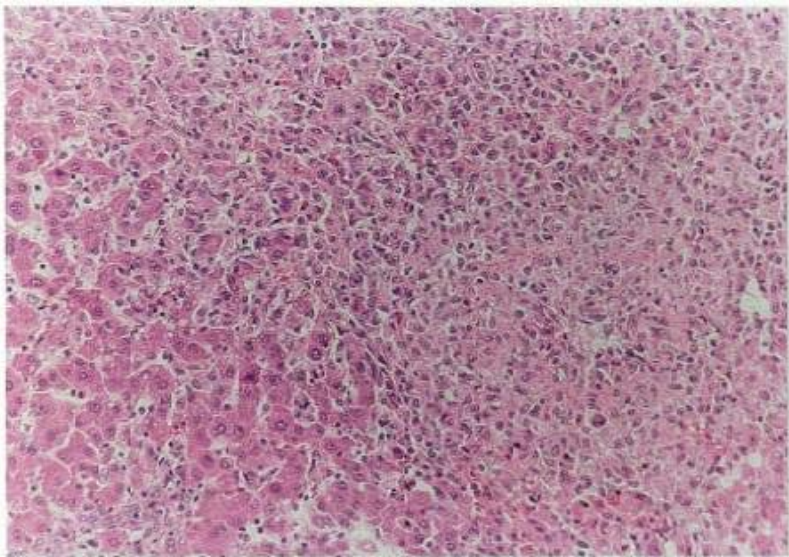




52. 1000 ppm Group, Female No. 8  
Killed *in extremis*

Fibroadenoma in mammary gland is shown.

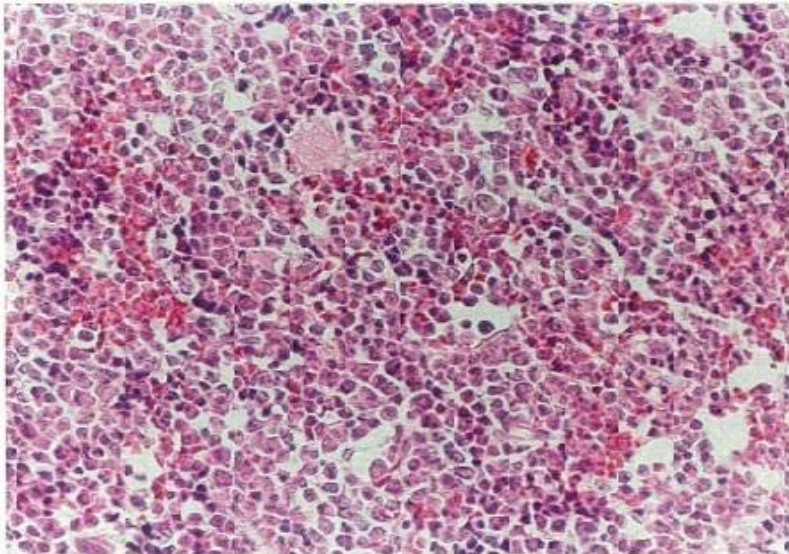
(x 100; H.E. stain)



53. 1000 ppm Group, Male No. 11  
Killed *in extremis*

Malignant lymphoma (histiocytic sarcoma) in liver is shown.

(x 100; H.E. stain)

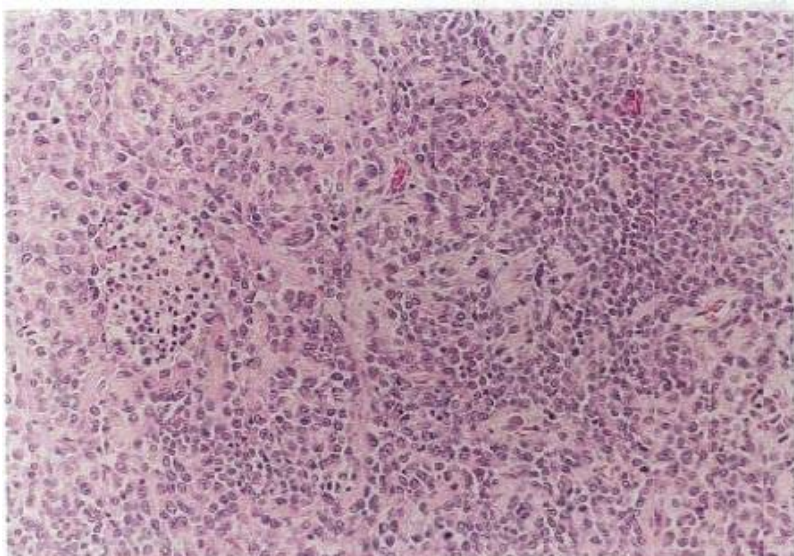


54. 1000 ppm Group, Female No. 5  
Killed *in extremis*

Myelocytic leukemia in bone marrow is shown.

(x 200; H.E. stain)

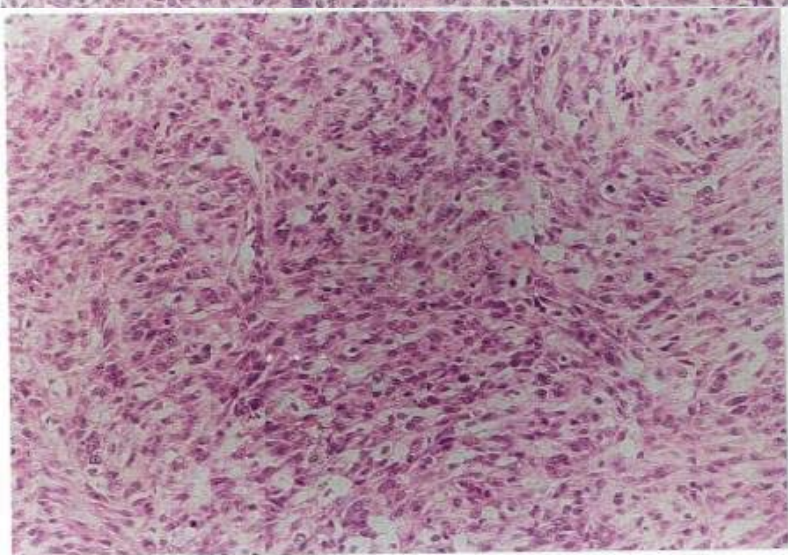




55. 1000 ppm Group, Male No. 24  
Found dead

Malignant fibrous histiocytoma in pleura is shown.

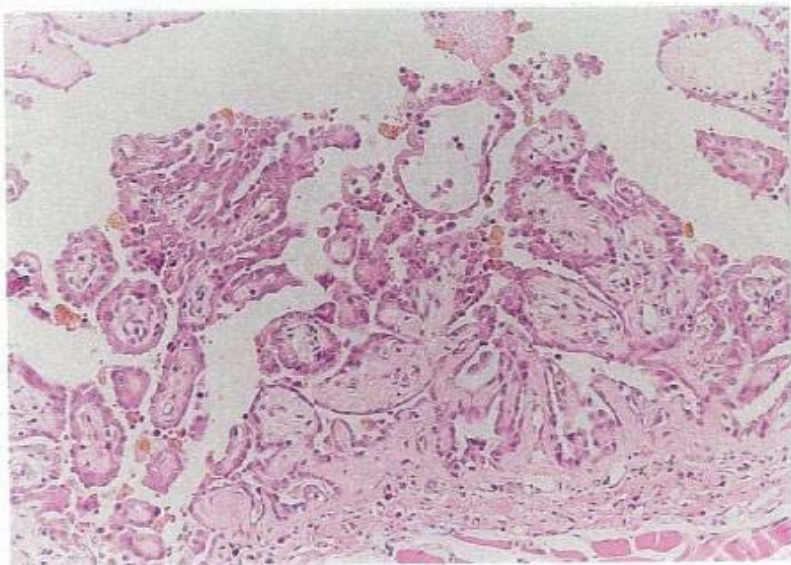
(x 100; H.E. stain)



56. 1000 ppm Group, Female No. 12  
Killed *in extremis*

Mesenchymoma in peritoneum is shown.

(x 100; H.E. stain)

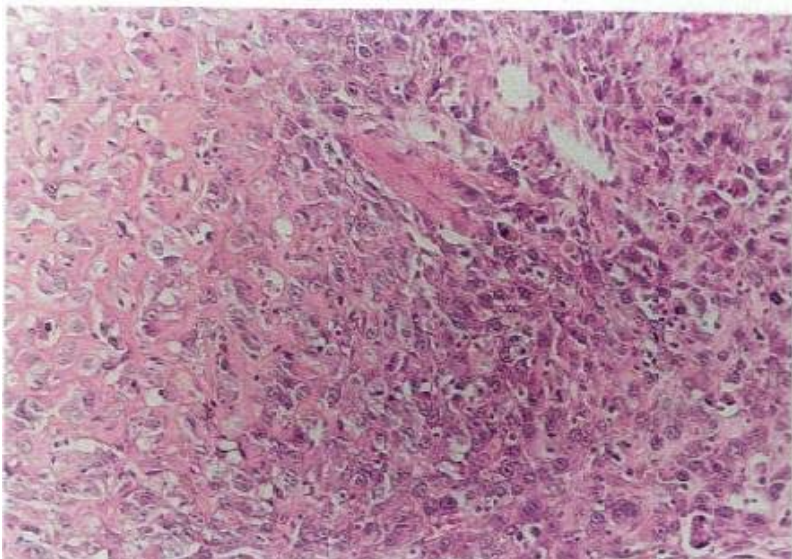


57. 1000 ppm Group, Male No. 18  
Killed *in extremis*

Mesothelioma in peritoneum is shown.

(x 100; H.E. stain)

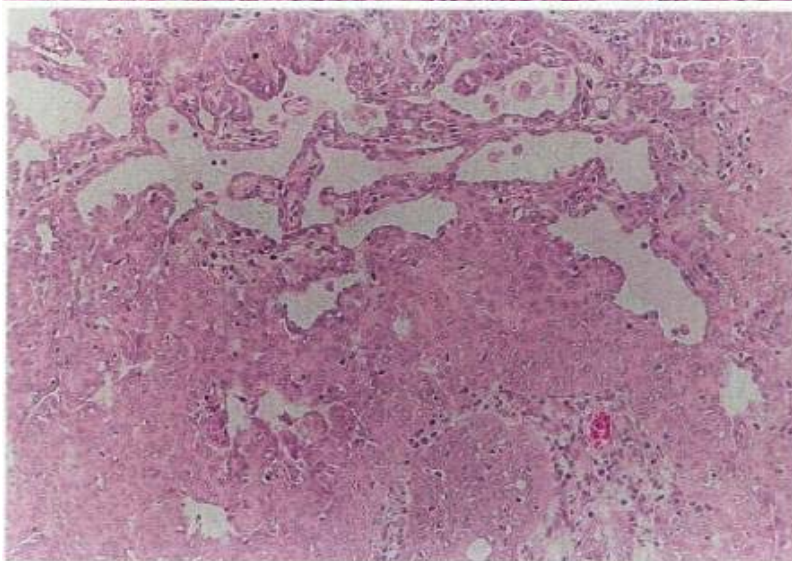




58. 1000 ppm Group, Female No. 33  
Killed *in extremis*

Sarcoma in peritoneum is shown.

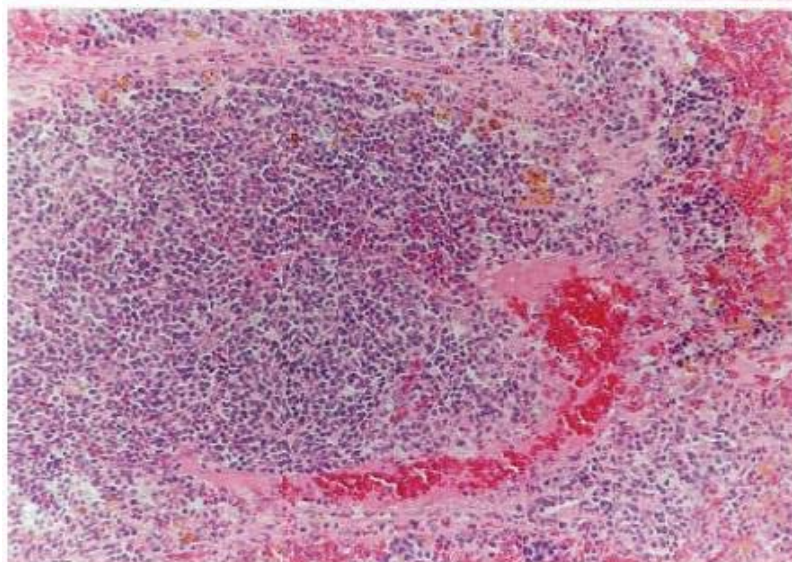
(x 100; H.E. stain)



59. 1000 ppm Group, Female No. 7  
Killed on schedule on Week 104

Thymoma in thymus is shown.

(x 100; H.E. stain)

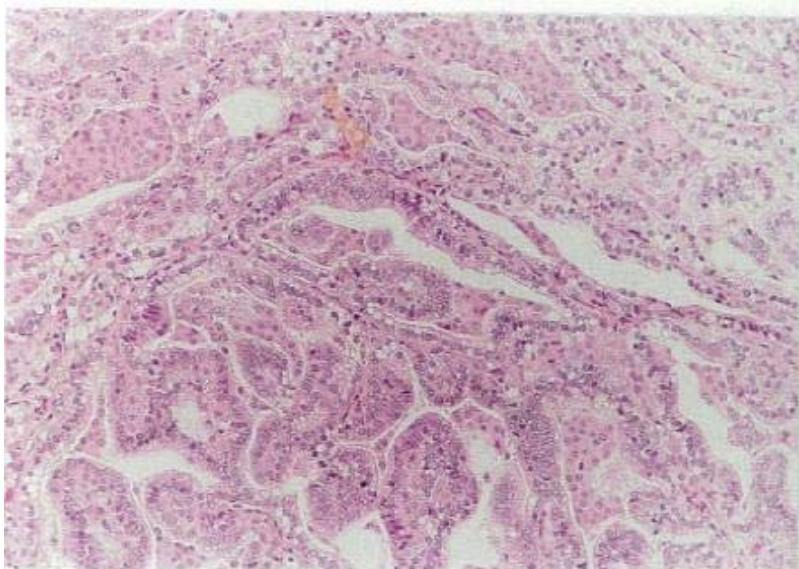


60. 1000 ppm Group, Female No. 47  
Killed on schedule on Week 104

Malignant lymphoma in spleen is shown.

(x 100; H.E. stain)

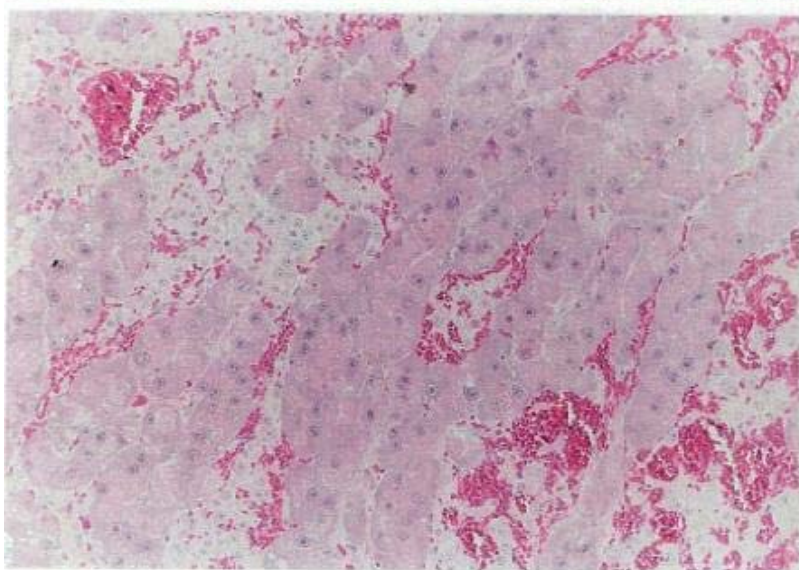




61. 1000 ppm Group, Male No. 15  
Killed on schedule on Week 104

Papillary adenocarcinoma in lung is shown.

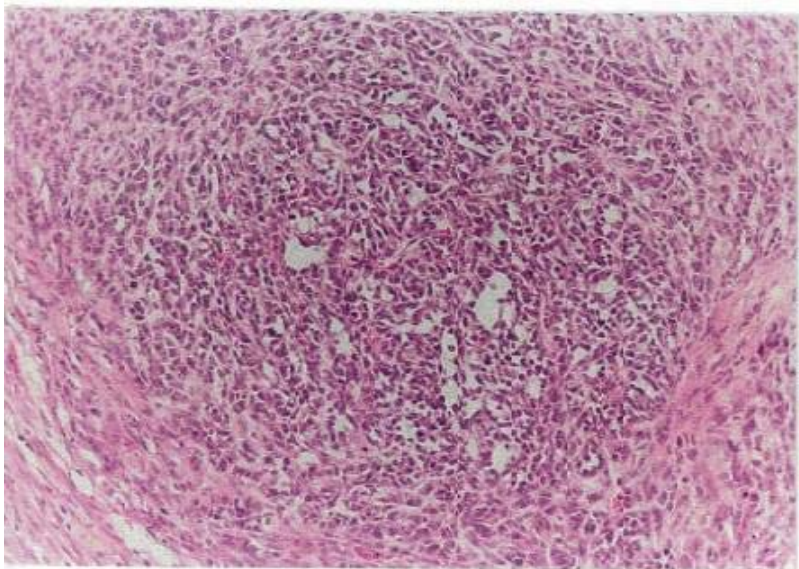
(x 100; H.E. stain)



62. 1000 ppm Group, Male No. 13  
Killed on schedule on Week 104

Exocrine adenoma in pancreas is shown.

(x 100; H.E. stain)

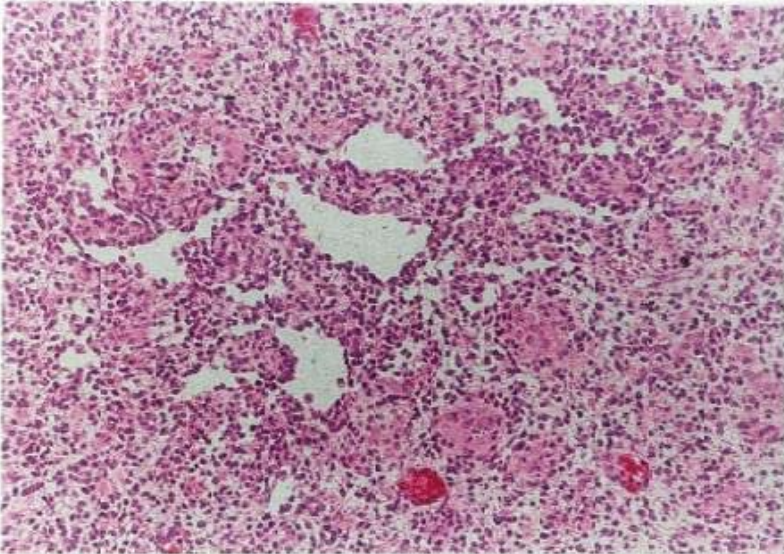


63. 1000 ppm Group, Female No. 44  
Killed *in extremis*

Granulosa-theca cell tumor in ovary is shown.

(x 100; H.E. stain)

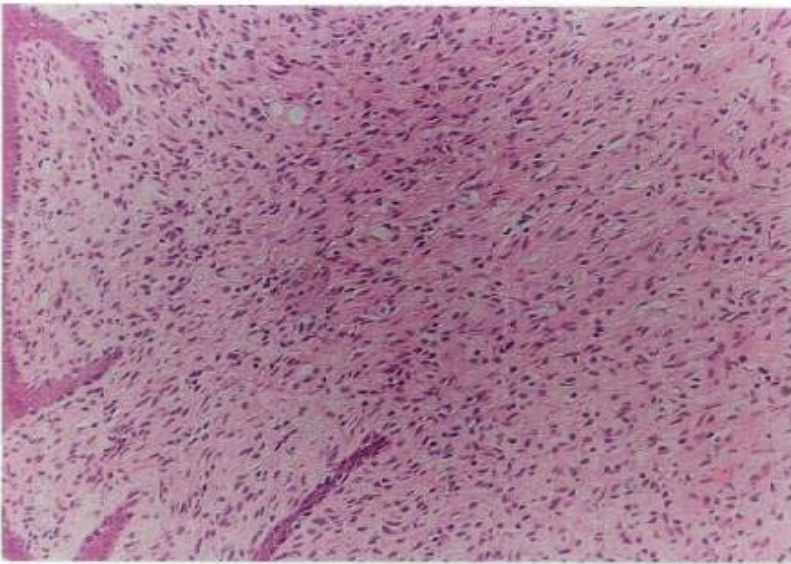




64. 1000 ppm Group, Female No. 11  
Killed *in extremis*

Endometrial stromal sarcoma in uterus is shown.

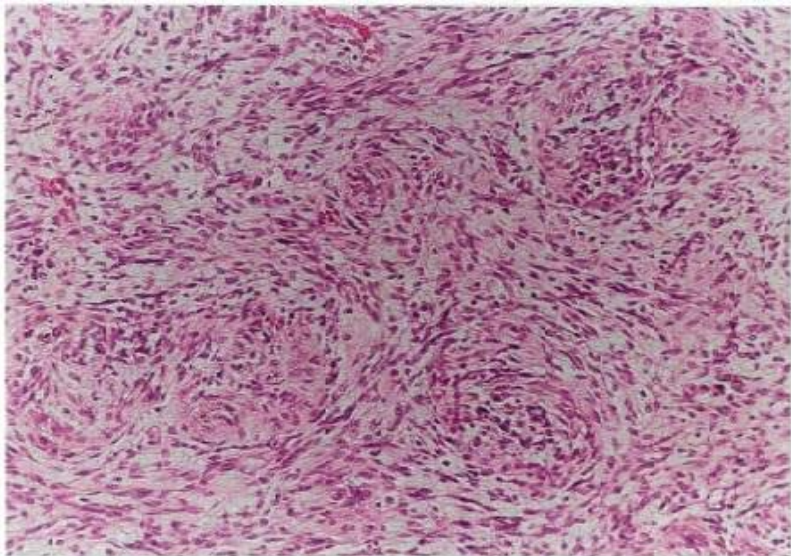
(x 100; H.E. stain)



65. 1000 ppm Group, Female No. 44  
Killed *in extremis*

Fibroma in uterus is shown.

(x 100; H.E. stain)

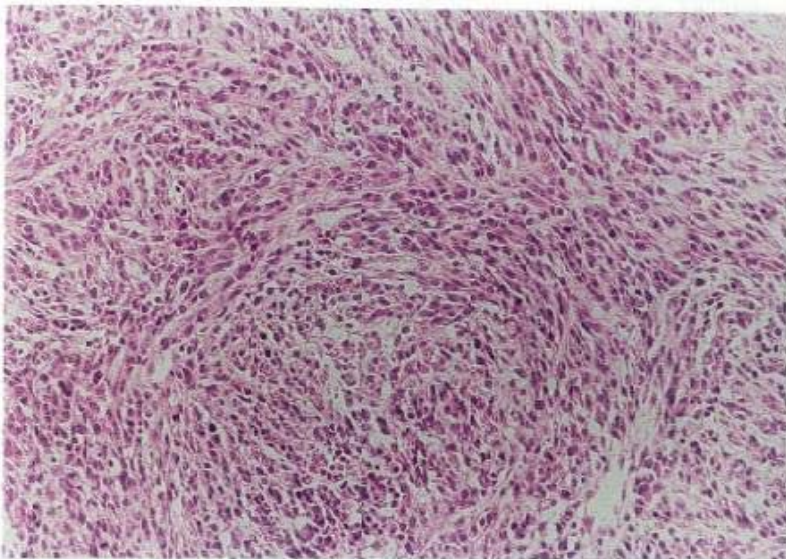


66. 1000 ppm Group, Female No. 52  
Killed on schedule on Week 104

Leiomyoma in uterus is shown.

(x 100; H.E. stain)

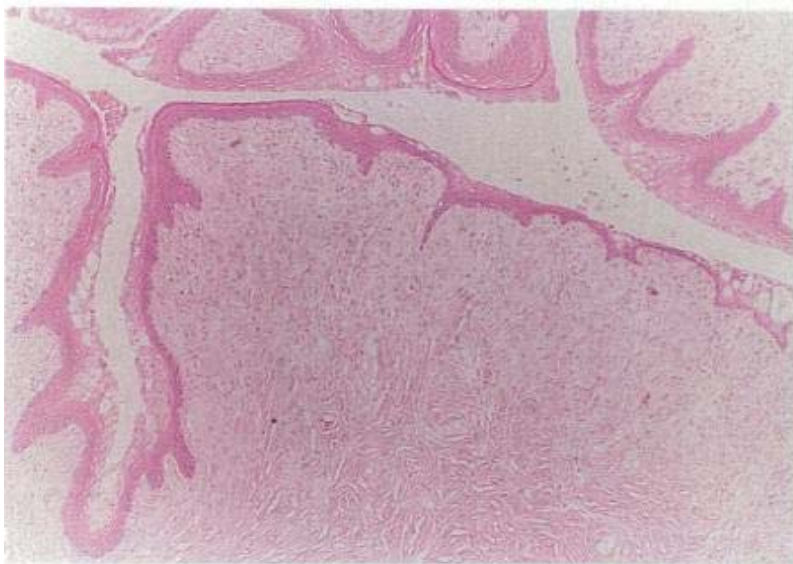




67. 1000 ppm Group, Female No. 12  
Killed *in extremis*

Mesenchymoma in vagina is shown.

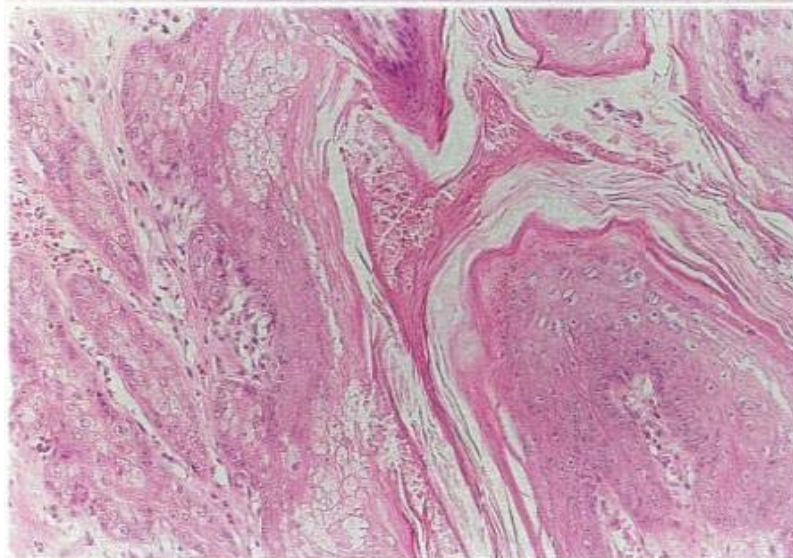
(x 100; H.E. stain)



68. 1000 ppm Group, Female No. 39  
Killed on schedule on Week 104

Polyp in vagina is shown.

(x 40; H.E. stain)

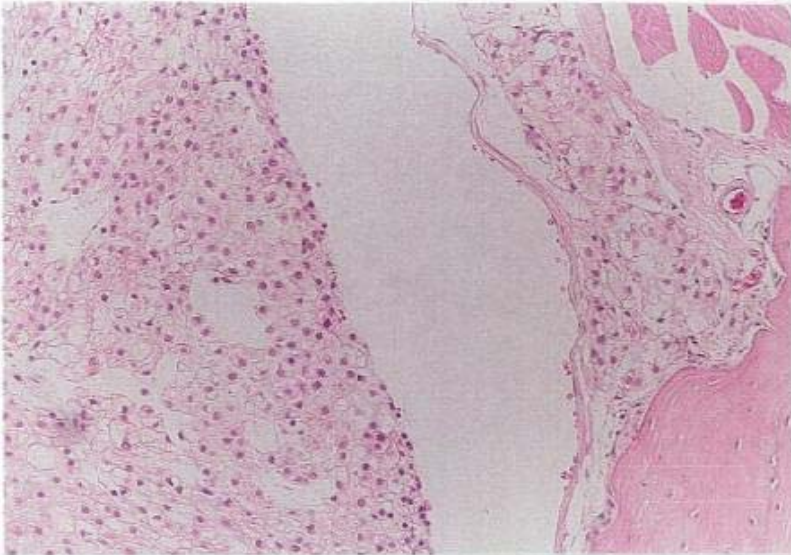


69. 1000 ppm Group, Female No. 2  
Found dead

Squamous cell carcinoma in clitoral gland is shown.

(x 100; H.E. stain)

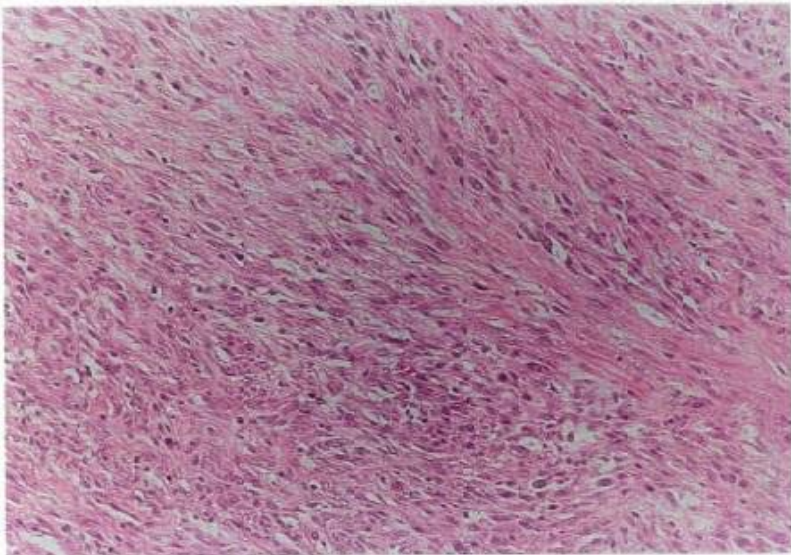




70. 1000 ppm Group, Female No. 52  
Killed on schedule on Week 104

Chordoma in spine is shown.

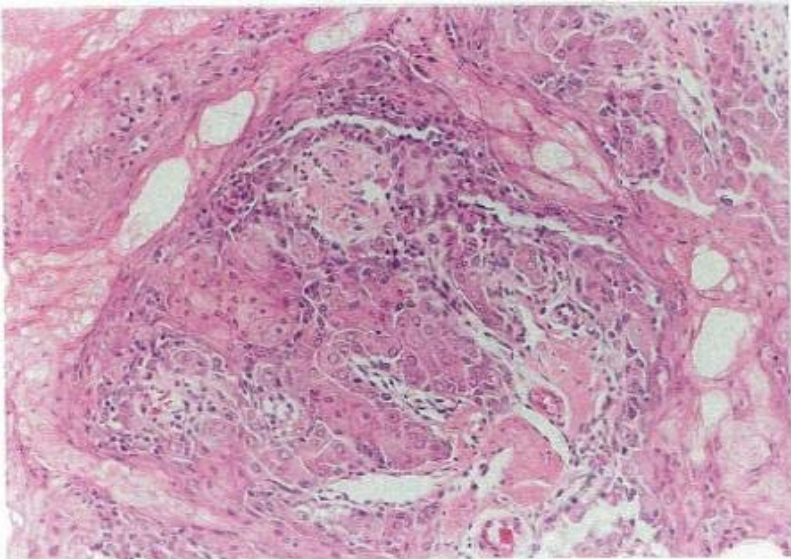
(x 100; H.E. stain)



71. 1000 ppm Group, Female No. 25  
Killed *in extremis*

Rhabdomyosarcoma in muscle is shown.

(x 100; H.E. stain)

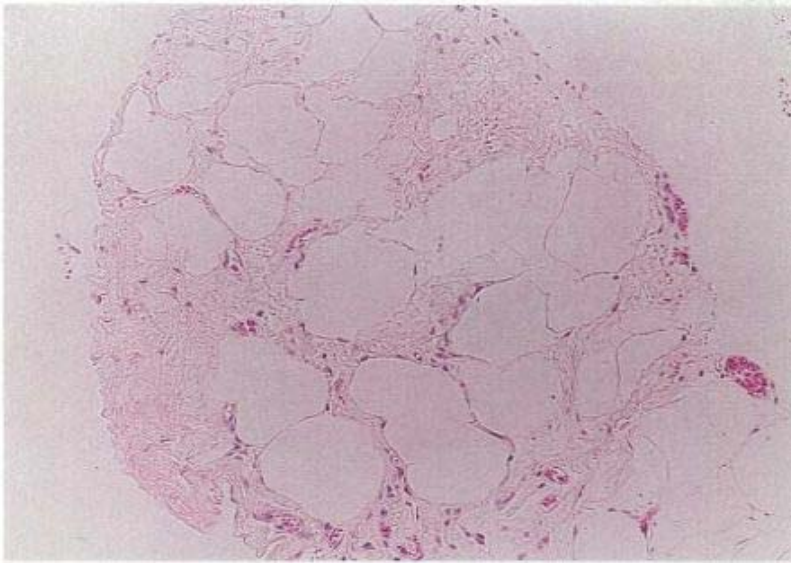


72. 1000 ppm Group, Male No. 12  
Killed *in extremis*

Sebaceous squamous cell carcinoma in skin is shown.

(x 100; H.E. stain)

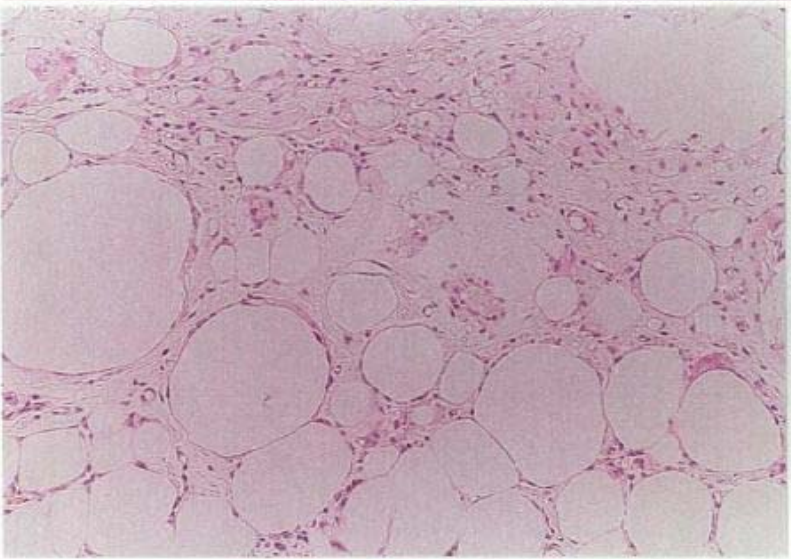




73. 1000 ppm Group, Male No. 17  
Killed on schedule on Week 104

Lipoma in subcutis is shown.

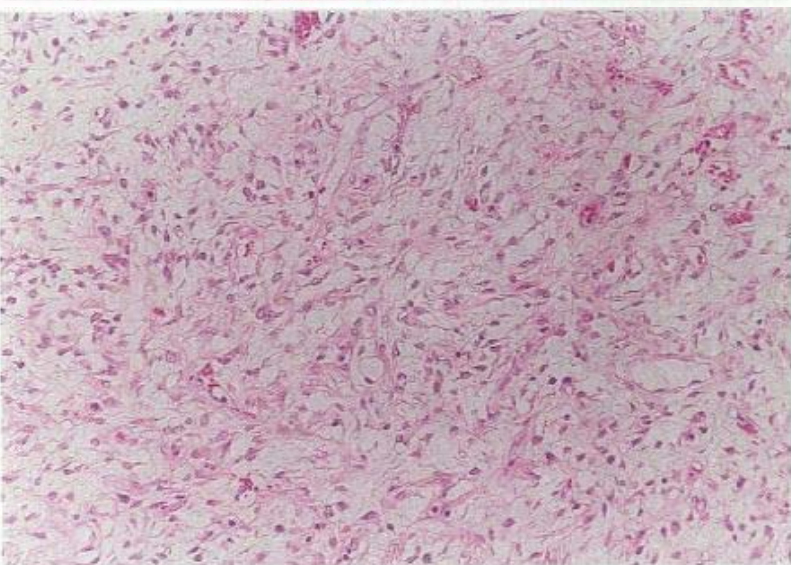
(x 100; H.E. stain)



74. 1000 ppm Group, Female No. 12  
Killed *in extremis*

Lipoma in subcutis is shown.

(x 100; H.E. stain)

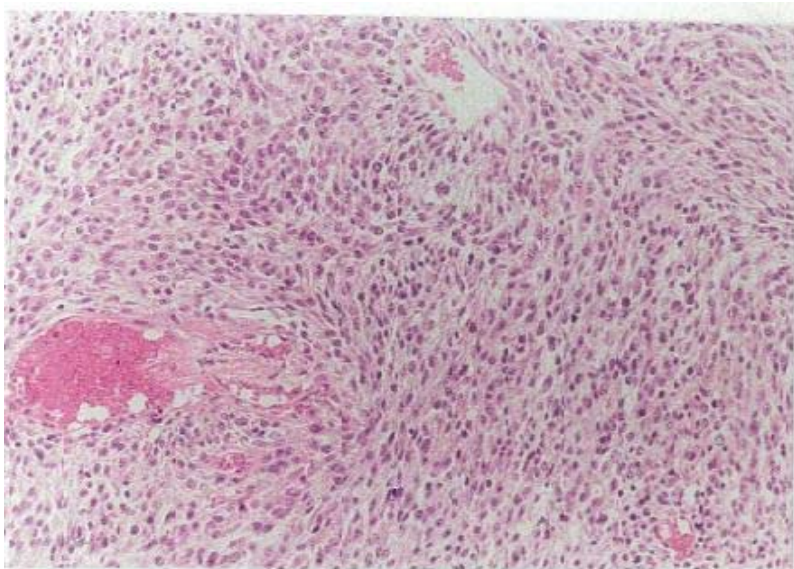


75. 1000 ppm Group, Male No. 14  
Killed on schedule on Week 104

Lipo-sarcoma in subcutis is shown.

(x 100; H.E. stain)

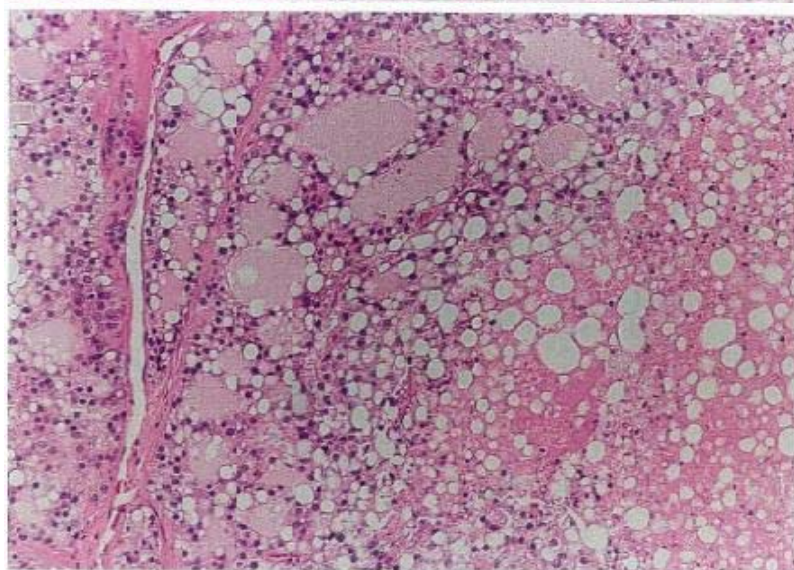




76. 1000 ppm Group, Female No. 12  
Killed *in extremis*

Mesenchymoma in subcutis is shown.

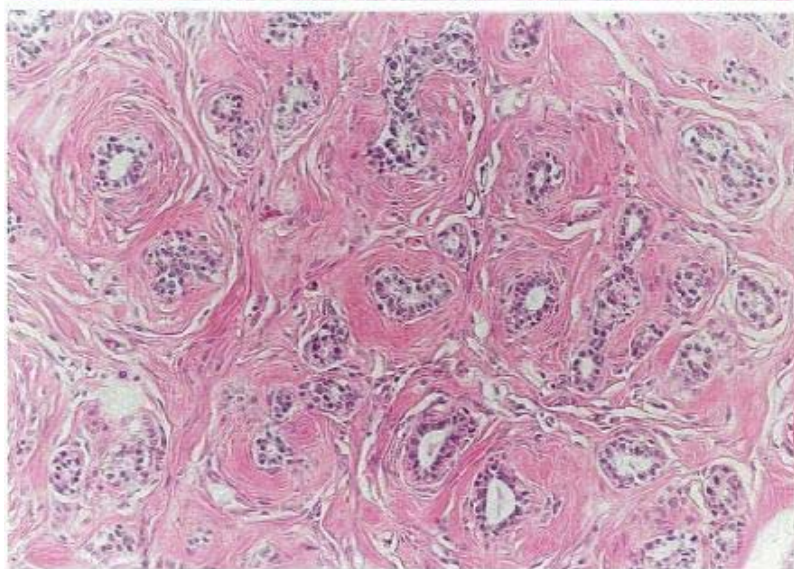
(x 100; H.E. stain)



77. 1000 ppm Group, Female No. 25  
Killed *in extremis*

Adenoma in mammary gland is shown.

(x 100; H.E. stain)

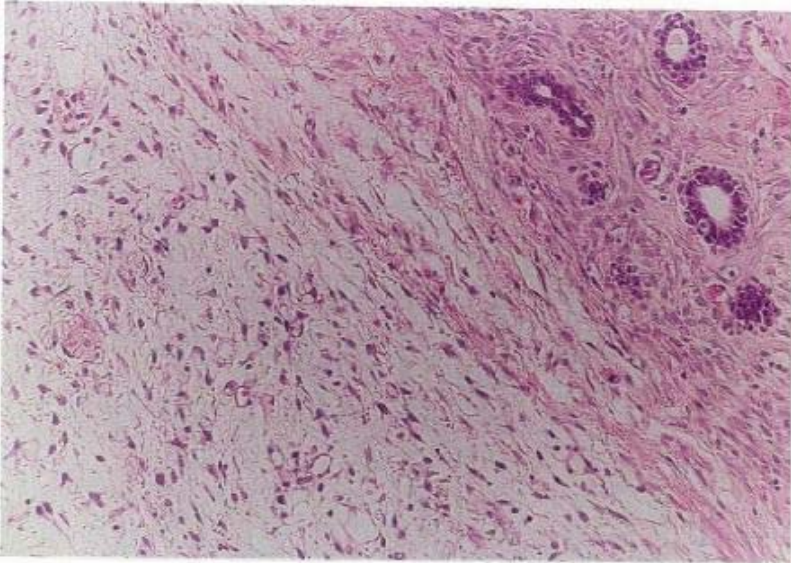


78. 1000 ppm Group, Male No. 6  
Killed on schedule on Week 104

Fibroadenocarcinoma in mammary gland is shown.

(x 100; H.E. stain)

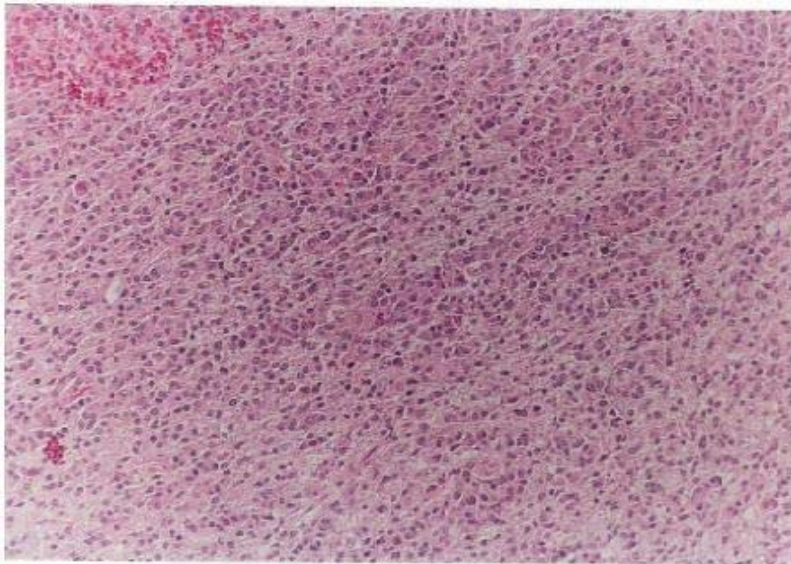




79. 1000 ppm Group, Male No. 43  
Killed on schedule on Week 104

Hamartoma in mammary gland is shown.

(x 100; H.E. stain)



80. 1000 ppm Group, Male No. 9  
Killed *in extremis*

Astrocytoma in brain is shown.

(x 100; H.E. stain)